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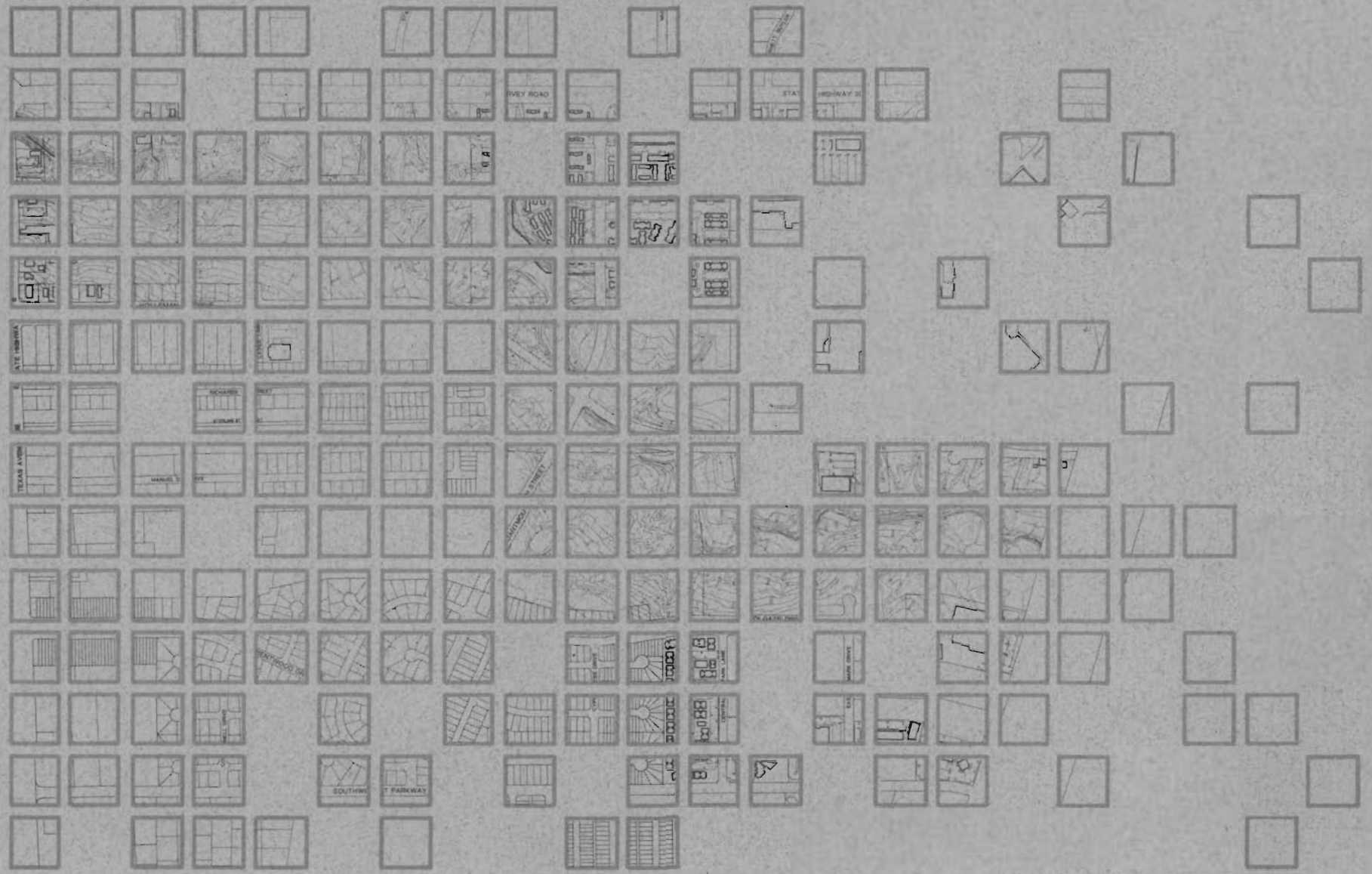
COLLEGE STATION, TEXAS

wolf pen creek corridor study



COLLEGE STATION, TEXAS

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- J. T. DUNKIN & ASSOCIATES, INC.
  Urban Planning Landscape Architecture Dallas, Texas
- NATHAN D. MAIER
  Consulting Engineers, Inc. Dallas, Texas

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Ron Kaiser
Walter Wendler

CONSULTANTS

J. T. Dunkin & Associates, Inc.
J. T. Dunkin
Dennis Sims
Bob Stoffels
Karen Koerth

Nathan Maier Consulting Engineers, Inc.
Erv Meyer

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Introduction

Introduction

GENERAL

Wolf Pen Creek is one of three streams in College Station flowing easterly into Carter Creek, a tributary to the Navasota River. Wolf Pen is a major way for the conveyance of storm water run-off, and is also a major linear space within the community with a potential for supporting other uses in addition to its primary use as a natural drainageway.

PROJECT BACKGROUND

This study was initiated as a result of the City Council's vision and foresight to maximize a section of Wolf Pen for public and private use as an active and passive recreational use before any further development occurs along its reach between Texas Avenue and Highway 6 Bypass. The location of the area under study and its relationship to the community is shown by Illustration 1.

In March, 1987, the Council studied the expenditure of park land dedication funds in the park zone which contains the section of Wolf Pen Creek addressed in this study. During discussion of expenditures and improvements, it was suggested the opportunities of the flood plain should be examined for recreational use. Comparison was made to a similar project in Navasota where considerable public support and assistance was given to the project by adjacent property owners and the general citizenry.

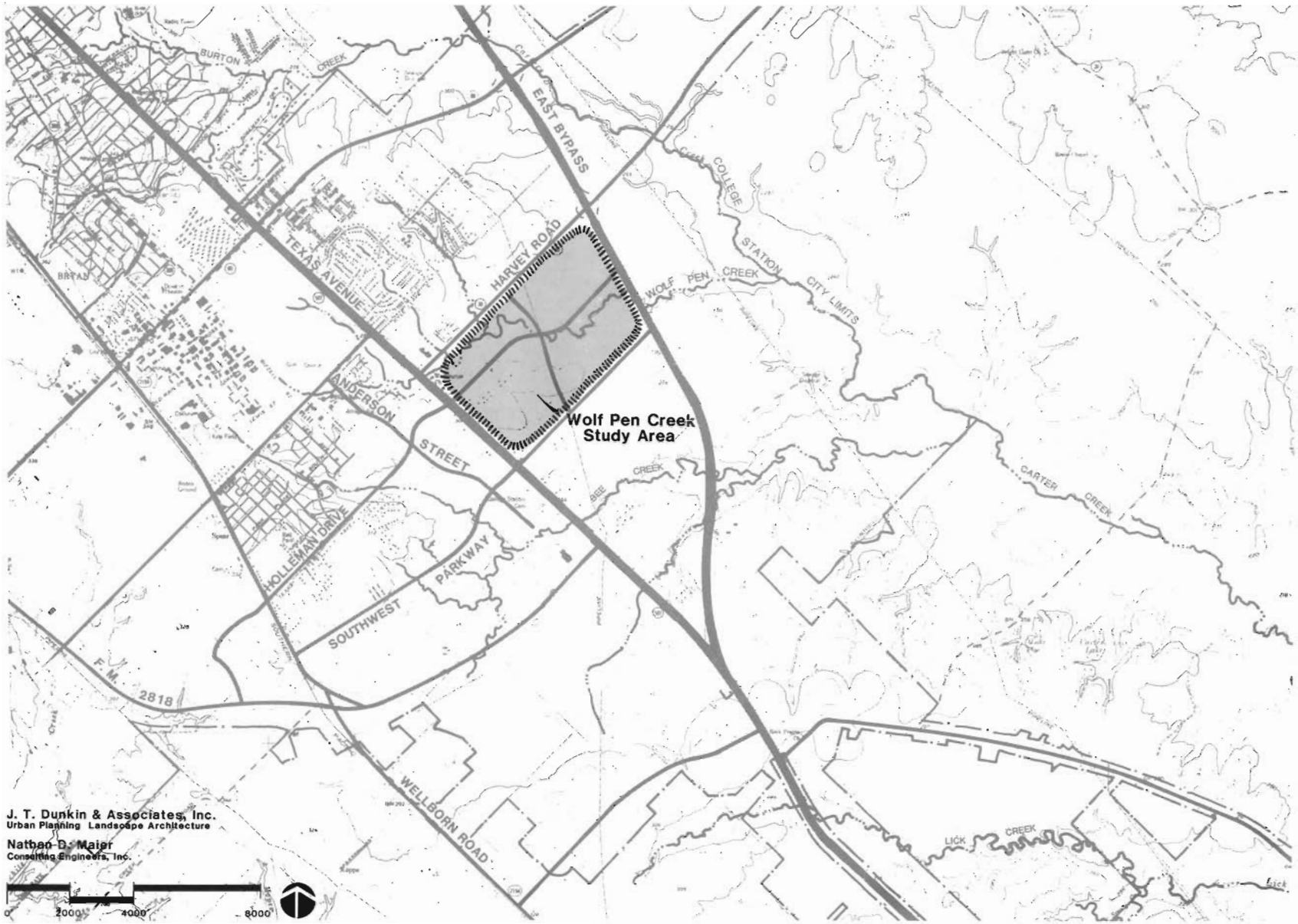
From this and other discussions evolved the Council's request of staff to develop a conceptual plan. Through collaboration between the parks, engineering, and planning departments, a conceptual approach for development of Wolf Pen was prepared and submitted to the Council. A slide program was also prepared to reinforce the conceptual plans to show the character of creek improvements made in other cities which could be applicable to the Wolf Pen Creek. Recognizing the potential existing along the stream's course, the City Council identified funding sources for planning, as well as, to amend the City's Land Use Plan to reflect park and open space use for a section of Wolf Pen.

Location Map

COLLEGE STATION, TEXAS

wolf pen creek corridor study

Illustration 1



In the July 1987 solicitation to consultants for proposals for the Wolf Pen Creek Park and Drainage Development Study, the City identified a specific goal and several objectives to be accomplished by this study. These items as set forth below have guided the development of this study which began in September, 1987.

GOAL

DEVELOP A COMPREHENSIVE PLAN TO RECOGNIZE THE INTERRELATIONSHIPS OF DRAINAGE, EROSION, AND RECREATION AS THEY APPLY TO THE WOLF PEN CREEK CORRIDOR FROM TEXAS AVENUE TO THE EAST BYPASS, AS WELL AS TO CREATE A COMMUNITY ATTRACTION FOR COLLEGE STATION RESIDENTS AND OUT-OF-TOWN GUESTS.

OBJECTIVES

Establish drainage practices in compliance with the College Station stormwater management plan

Utilize soil stabilization and other methods to deter erosion of creek banks

Promote urban development with the creek as an amenity to development

Encourage participation directed to an overall plan as opposed to piecemeal projects

Recognize the Wolf Pen Creek Development as an open space park connector, as well as part of the city wide park system of bicycle and pedestrian trails

Orient focal points in the creek development to major access points throughout the creek corridor

Develop recreational and cultural programs and facilities designed to maximize the potential usage of the creek as a community attraction

Preserve as much of the natural beauty of the creek's plants and wildlife as possible

Seek and receive matching funds through Texas Department of Parks and Wildlife

DEVELOPMENT STUDY

This study examines approximately a one and one-half mile section of the creek between the Highway 6 Bypass and Texas Avenue. The complete study is comprised of this document and an accompanying study entitled "Flood Plain Evaluation, Revised Existing Conditions on Wolf Pen Creek. The latter document investigates the Creek's water shed above the study area under complete urbanization conditions for determining the one-hundred year flood plain between Texas Avenue and Highway 6 Bypass. The flood analysis has been prepared to submit to the Federal Emergency Management Agency for granting of a letter of belief.

The following sections of this document set forth: (1) a brief review of the Flood Plain Evaluation Study; (2) analysis and evaluation of the various natural and man-made features influencing development along the stream and within the defined study area; (3) a conceptual approach to development of the flood plain and adjacent properties; and (4) the Wolf Pen Creek Development Plan and supportive material discussing the plan elements and the tools and incentives anticipated to be needed and used for plan implementation.

This document is intended to serve as a guide for the cohesive and cooperative development of the spaces along and adjacent to Wolf Pen Creek for both public and private use.

Flood Plain Evaluation Summary

Flood Plain Evaluation Summary

FLOOD PLAIN EVALUATION SUMMARY

The hydrologic and hydraulic investigation completed for Wolf Pen Creek and its tributaries, prepared as a part of this Study, provides detailed flood plain information based upon hydrologic conditions existing in the watershed today. The Study also serves as an update to the Flood Insurance Study (F.I.S.) published in 1981.

Specific data developed by the Study addresses the reach of Wolf Pen Creek from 2,630 feet upstream of Carters Creek to west of Anderson Street and three tributaries. The location of these features is shown on Plate 1. The Study will be submitted by the City of College Station to the Federal Emergency Management Association (FEMA) for their review, comment and issuance of a letter of belief. This step allows individual tracts of land for this section of Wolf Pen involved with the flood plain to submit their tracts on a parcel by parcel basis for approval, if and when they desire to alter the flood plain on their property.

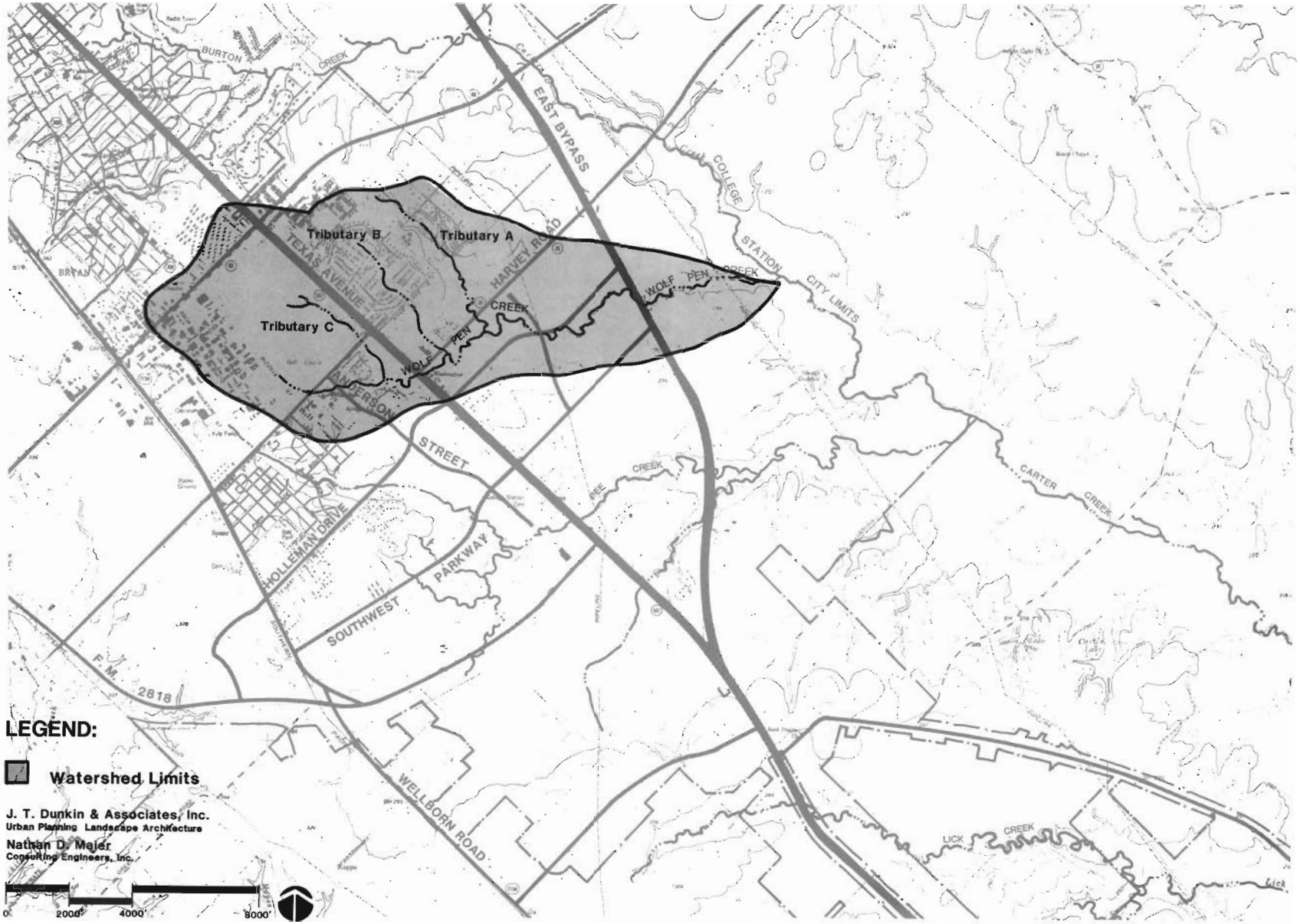
Since the hydrologic and hydraulic study updates the 1981 F.I.S., there is some change in the findings for flood plain elevations on properties related to the reach of the Creek studied in this report. Similar data has been developed in recent studies for the City, and therefore, the findings presented in the Flood Plain Evaluation Study are not to be considered completely new information developed since the 1981 Study.

The Wolf Pen Creek Master Plan presented in this report, as previously noted, is for the reach between Texas Avenue and Highway 6 Bypass. The basis of this study's design considerations is the location and extent of the floodway and flood fringe limits for the present 100-year flood plain. Therefore, these limits have been the beginning point for all analysis, evaluation, and conceptual design. Since the floodway is considered an area which cannot be substantially altered or used for urban purposes, and the use of flood fringe is dependent upon its feasibility for reclamation, this combined space is considered to be the minimum for public use.

Flood Plain Study Area

COLLEGE STATION, TEXAS
wolf pen creek corridor study

Plate 1



Study Area

Study Area

STUDY AREA

An area bounded by Harvey Road and Southwest Parkway, Texas Avenue, and Highway 6 Bypass is defined as the Study Area. These major thoroughfares enclose an area considered to be a planning unit containing a variety of existing land uses and zoning categories. As the creek space is developed, a positive impact on properties can be anticipated throughout the Area of a varying degree dependent upon a property's relationship to the Creek. Although the development of Wolf Pen is expected to become a community focal point, the impact on the immediate area is likely to be of significant value to all properties located within the Study Area.

Within the Study Area, as shown by Plate 2, are two other spaces referenced throughout this report. A space was defined as the Corridor Area and is situated west of Dartmouth Street between Harvey Road and Holleman Drive, as well as, east of Dartmouth Street between Holleman and Colgate Drives. This space contains the Creek and adjoining properties which are capable of becoming an integral part of the development concept.

Wolf Pen's flood plain is contained within the Corridor. Since the floodway is a space which cannot be reclaimed nor built upon within the flood plain, this space is referred to as the Core Area. The Core Area is the basic space from which the plan alternatives were expanded into the adjacent flood fringe area or into the sections of private properties along this reach which have no development impedient as a result of potential flooding.

Study Area

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 2

Existing Conditions

Existing Conditions

GENERAL

A variety of factors influence the development of land. Some are inherent characteristics of the site and can be modified or changed while others are external to the site and usually cannot be altered to benefit the land's development. Therefore, those factors both on and off-site within the Study Area which were considered to have an influence on the development of Wolf Pen as an open space area were examined and analyzed. This analysis provides an insight to potential utilization of the land, as well as, identifying those features which may be considered constraining to the project.

The following factors within the Study and Corridor Areas were identified: (1) ownership; (2) topography; (3) vegetation; (4) land use; (5) utilities; (6) zoning; and (7) accessibility. Plates 3 through 8, which follow, display the graphic presentation of each factor, in relationship to the 100-year flood plain boundary as determined by the Flood Plain Evaluation Study previously mentioned. This delineation helps to relate the existing drainage conditions to each of the factors considered to have influence on use of property adjacent and nearby the Creek.

OWNERSHIP

Ownership of property in the Corridor Area, with the exception of smaller platted lots, is shown on Plate 3. Between Highway 6 Bypass and Dartmouth Street, the flood plain is in contact with six tracts. Of these, all are vacant except the smaller tract west of Oak Way Drive on which is situated a Sears facility. Thirteen separately-owned tracts lie between Dartmouth Street and Texas Avenue which either straddle or come in contact on one side with the creek and flood plain. East of Dartmouth Street, there are approximately 36.4 acres in the floodway and 17.5 acres in the flood fringe for a total of 53.9 acres in the flood plain. Values similar for the Corridor west of Dartmouth Street are 16.2 acres in the floodway, 24.1 acres in the flood fringe for a total flood plain of 40.3 acres.

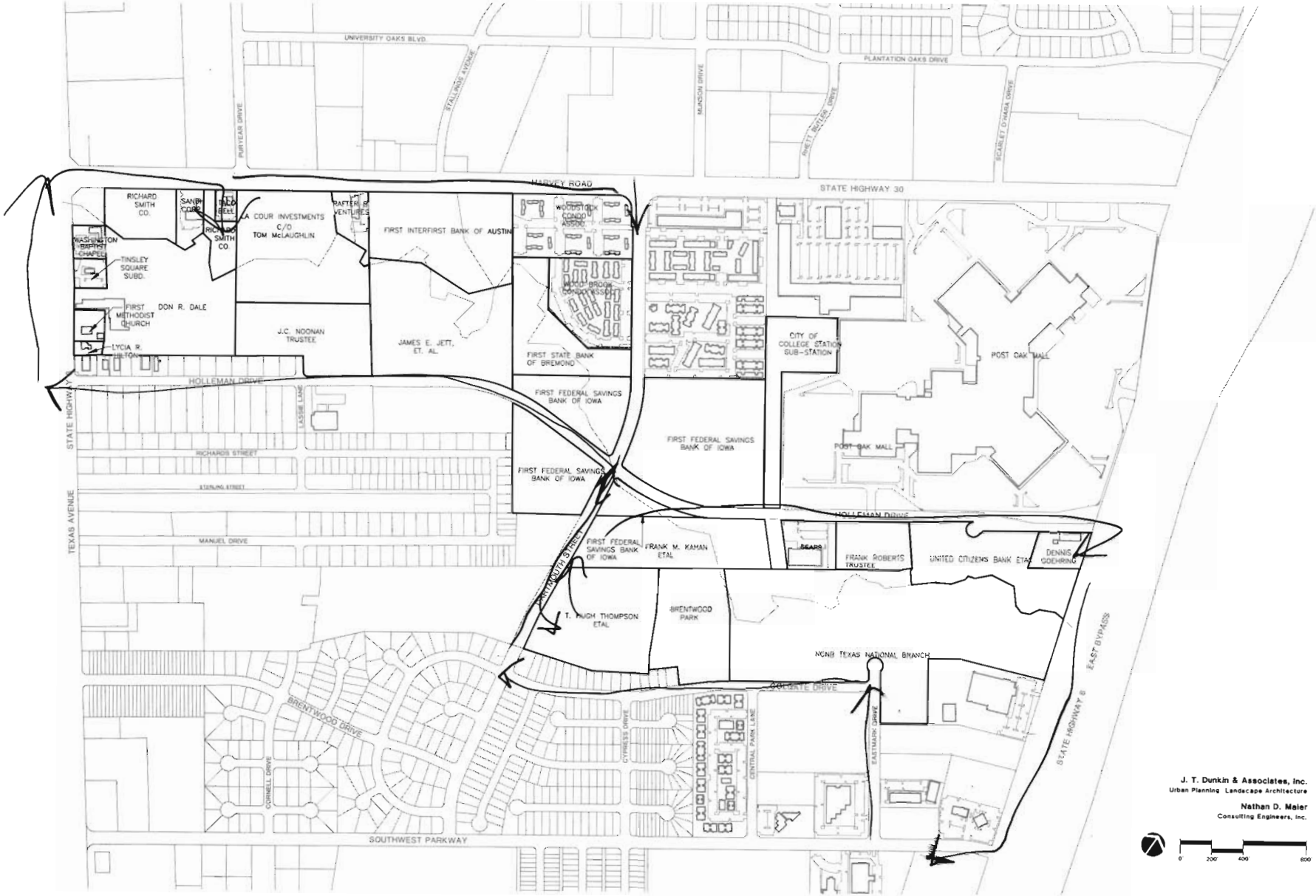
Most tracts adjacent to the flood plain are of sufficient size to permit development to occur on the remainder of the property if there is no reclamation in the flood plain. Two tracts, one located on either side of the intersection of Dartmouth Street and Holleman Drive, are almost totally within the

Ownership

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 3



J. T. Dunkin & Associates, Inc.
Urban Planning Landscape Architecture

Nathan D. Maier
Consulting Engineers, Inc.

flood plain. Other tracts, such as the smaller developed parcels situated on the south side of Harvey Road, are occupying only the usable portion of the parcel outside the flood plain. The Baptist Church tract fronting Texas Avenue adjacent to the Creek is an example of a structure on a developed parcel within the flood plain.

The ownerships abutting the Creek will possibly aid the acquisition of the floodway and flood fringe area. It would be desirable to obtain the preponderance of the property needed for open space purposes by dedication.

TOPOGRAPHY

The lay of the land and whether it can be changed often influence the type of use which can occur on the land for active and passive recreational purposes. The topography shown on Plate 4 is indicated in two-foot intervals with the percentage of slope shown by three categories; less than 7, 7 to 15, and 15 percent or greater. The percentage is expressed as the number of feet the elevation would change in a distance of 100 feet. If the elevation changes two feet vertically in a distance of 20 feet, the percent of slope is 10. Usually, slopes less than 7-8 percent are manageable and can be used for a variety of purposes. When slopes become steeper, various methods of grading and retainage can be used and are generally required to provide a more satisfactory grade and usable space when abrupt changes occur over a short distance.

As shown on Plate 4, slopes steeper than 15 percent are generally confined to the edges of the stream line and represent the change from the flow line to adjoining ground line. Because of the change in elevation and the location adjacent to the flow line, these slopes are normally subject to erosion and will need some type of treatment to prevent the gradual erosion and provide a manageable condition within the floodway.

The predominant slope within the Corridor Area as shown is in the category of 7 percent or less. Design for facilities on these grades can accommodate a variety of recreational uses without change to topography or with minor grading to provide the desired surface slope. The more steep grades in this category occur east of Dartmouth Street and east of Texas Avenue on the south side of the Creek.

Topography

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 4

The 7 to 15 percent slopes are scattered and are generally represented by sudden changes in the topography and do not extend over an area of any significant size. An exception to this condition is the land at the southeast corner of Dartmouth Street and Colgate Drive. These slopes can be handled in their current condition by incorporating the slope into the design or by grading with adjacent area to provide a uniform slope.

In addition to the topography, the drop in elevation along the stream line also influences the utilization of space within the flood plain. Overall, between Texas Avenue and the Bypass, a 27-foot change in elevation occurs in the flowline elevation. This change represents a three to four percent slope for the flowline. The change between the Bypass and Dartmouth Street is 19 feet and 8 feet between Dartmouth Street and Texas Avenue. These slopes influence erosion, flow, and the type and nature of features, such as lakes, which can be incorporated in the design for the floodway improvements. As an example, the gradual slope will require any lake area to be excavated rather than retained with a dam where there could be provisions for waterfalls. Similarly, the grade, as well as the bottom width of the floodway, as formed by the topography, would make the linkage of water surface areas for boating an expensive endeavor.

The nature of the topography along the Creek is varied an will tend to be one of the few natural elements to influence design decisions.

VEGETATION

Stream corridors generally have the predominant vegetative cover in comparison with the remaining landscape, and the quality and quantity of the cover should be observed to determine the importance and feasibility of its preservation. The Corridor Area was walked to evaluate the existing vegetation and identify its value for preservation and coordination into the Plan. The present tree cover, as well as the general location of significant trees is shown on Plate 5. These trees, because of their species, size, and quality of growth, are considered to be outstanding within the Corridor.

There is considerable difference in vegetative growth between the sections east and west of Dartmouth Street. East of Dartmouth Street, there is a limited area of tree mass where overstory trees

Vegetation

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wolf pen creek corridor study I

Plate 5

J. T. Dunkin & Associates, Inc.
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0' 200' 400' 800'

are generally Hackberry, Elm, and Ash, Post Oak, and Pecan. For a distance of 600-800 feet immediately west of the Bypass, the area is generally without overstory and understory growth. Further west along the south side of the Creek in the vicinity of the Brentwood Park site, the character is changed by the native plant growth. There are several adverse effects to the physical environment as a result of work done to the creek channel when the Dartmouth Street structure was built several years ago in conjunction with Holleman Drive.

West of Dartmouth Street, overstory trees are predominantly hardwood species containing large Post Oak, Water Oak, Ash, and Elm. Yaupon Holly is abundant and thriving as an understory plant where sunlight penetrates the dense tree canopy. As shown on Plate 5, the most significant overstory and understory growth occurs immediately west of the Woodstock and Woodbrook condominiums. The nature of the taller hardwoods and the floor of the Corridor indicate the need to carefully preserve the pristine character found in this section of the Corridor.

Further west and to Texas Avenue, a scattering of Post Oaks and understory are along the south side of Harvey Road. In a similar stretch along the south side of Wolf Pen Creek are smaller Elms in dense growth and an absence of any significant trees.

In the planning and implementation of the Wolf Pen Creek Plan, conservation of natural cover should be a major consideration. When necessary to preserve special or unusual areas, such as found west of the Woodstock and Woodbrook condominiums, special efforts and plans should be set in place to acquire the preponderance of this space and maintain it as a natural area.

LAND USE

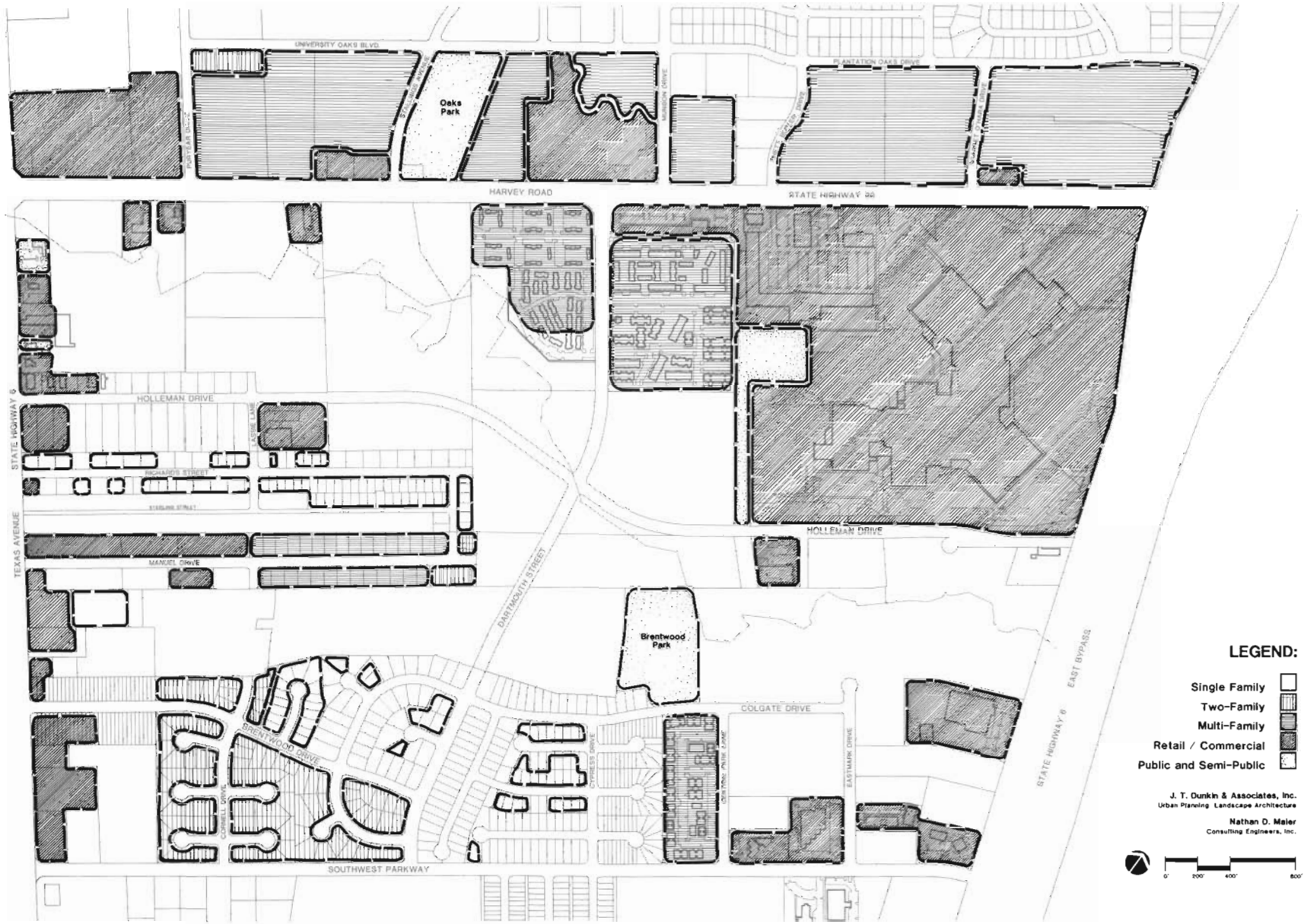
The amount of land used in the Corridor and its use, as well as, the location and quantity of vacant land is important to the planning approach for the Wolf Pen open space. Shown on Plate 6 is the existing land use pattern within the Study Area. As indicated, other than the Mall at the intersection of Harvey Road and Highway 6 Bypass, tracts are of average size and generally developed along the major streets, Southwest Parkway, Texas Avenue and Harvey Road. The only penetration of the Study Area is by those uses shown along Manuel Drive and Richards Street.

Land Use

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 6



The type of use is identified by the legend, and as indicated, within the Corridor the preponderance of use is retail-commercial, multi-family, and vacant. A sizable area of vacant land along the Creek's bounding tracts is a positive factor for the planning and phasing of facilities. This pattern of vacant land, coupled with the ownership pattern, should aid in the public-private effort for development contemplated within this Study.

The quality of uses within the Corridor is considered an asset, setting the tone for future development of private property and aiding in the stability desired for the open space surroundings. It is anticipated future uses will be related to and complemented by the Wolf Pen Creek open space.

UTILITIES

Utilities become important within the planning scope of a facility such as Wolf Pen Creek because of the possible lacing of the area with underground and overhead facilities which become costly or impossible to relocate. There are several lines in the Corridor; however, no major problems or unreasonable expense is anticipated in the implementation of this facility.

Shown on Plate 7 are the underground utilities; water, sewer, Lone Star Gas line, and the overhead electric lines. Some lines feed surrounding use from the power sub-station located west of the shopping mall. Water lines are available and service existing use with capability of extension into the Wolf Pen Corridor for service as needed.

The most serious problem which could be caused by the sewer lines would be interference with construction in the floodway, requiring excavation; otherwise, recreational facilities can be located away from underground lines by good site planning procedures.

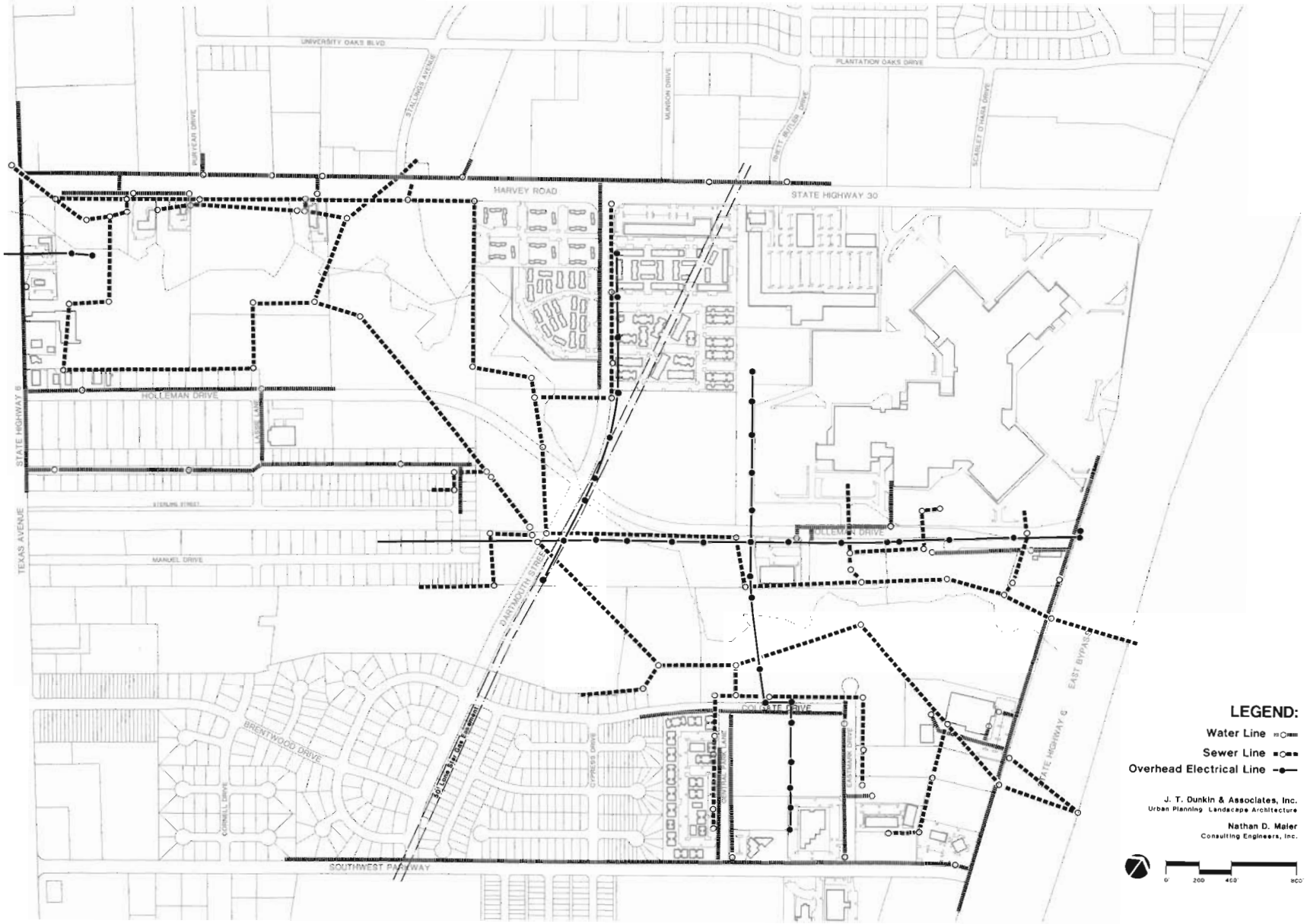
It is important to recognize that in using matching funds for improvements, the Texas Park and Wildlife Agency will require all overhead service lines to be placed underground.

Utilities

COLLEGE STATION, TEXAS

wolf pen creek corridor study

Plate 7



ZONING

Current zoning of land related to the Wolf Pen Creek improvement influences the future use of the undeveloped land, as well as its economic value. The project area is within the developed section of the community and land within the Corridor has been placed in a permanent zoning district. Several districts have been utilized and the resulting zoning pattern is shown by Plate 8. Analyzing present zoning is important since it will assist in coordinating and selecting recreational space and uses for compatibility with adjacent lands.

As indicated on Plate 8, the preponderance of land west of Dartmouth Street from Harvey Road south to Richards Street is zoned for C-1, General Commercial. This zoning district is designed to provide a location for general commercial and retail uses serving the entire community. The district will allow uses from general convenience retail through office, lodging, and major retail uses such as is found in Post Oak Mall. Residential zoning along and south of Richards Street is for single family use; however, the present and any future residential uses will be somewhat removed from the direct benefits of the Wolf Pen open spaces.

East of Dartmouth Street, a similar commercial zoning pattern exists north of the Creek. South of Wolf Pen Creek, two major parcels are zoned R-1 and R-5 for residential use. These properties lie either side of the Brentwood Park site. Frontage along the Bypass is zoned for C-2, Commercial-Industrial which permits uses similar to the building material business and office building located north of the Southwest Parkway.

The present zoning pattern will allow types of uses to be developed adjacent to Wolf Pen which will not adversely influence adjacent land use. However, with the land being zoned, it can be expected ownership along the Creek corridor may have tentative plans and land values assigned to their properties. Coordinating the planning effort with the ownership to obtain maximum utilization of the private property, and the property desired for public use, will be a major effort throughout the development of Wolf Pen. It can be contemplated some special considerations as related to zoning standards can be utilized in the Corridor.

Zoning

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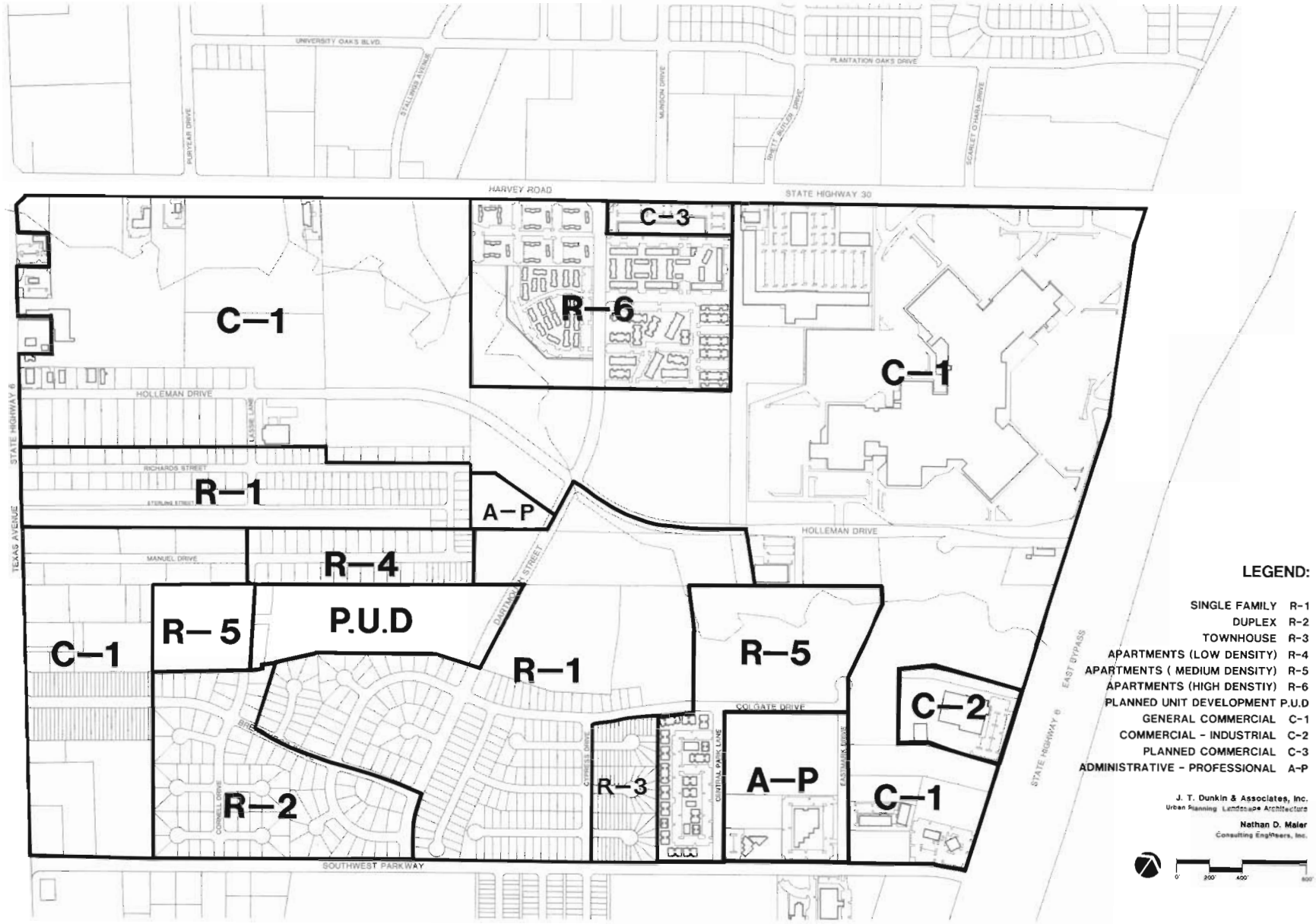
Plate 8



ACCESS

Access to Wolf Pen Creek, other than through private property, is now available at Texas Avenue, the intersection of Holleman Drive and Dartmouth Street, and Highway 6 Bypass. This factor will be a major element in the Plan for Wolf Pen. Unless it is possible for people to easily access the Wolf Pen area, either by vehicle or as a pedestrian, the maximum use of the facility will not occur. Vehicular access and parking will be needed for activities generating traffic from outside the immediate area. Since most properties are zoned for business use, it should be possible to plan shared parking. When users of Wolf Pen require parking, adjacent businesses will likely be closed unless they are of a direct service use such as a restaurant.

Development Tools

GENERAL

Ordinances and policies are written and adopted to address means of directing and controlling urban development for the entire City. The intent of such documents is to provide a reasonable level of development while protecting property values and the general welfare of the citizens. A factor of consideration in formulating most ordinances and policies involving public works is the original cost for improvement and the continuing cost for maintenance. These costs often originate with the developer (unless the project is financed with public funds), with the cost for maintenance and possible replacement or repair being the ultimate responsibility of the City. In a project of the nature of Wolf Pen Creek presented herein, current adopted ordinances and policies need to be assessed for their application to the Plan. If there are alternative means for developing the project in a manner which is equitable to the property owner and to the City, these alternatives should be known and incorporated into present ordinances.

In this section, an overview is set forth describing the influence those applicable ordinances and policies will have on the corridor development. Comments are also set forth which are considered appropriate for adaptation of the ordinance or policy to the Wolf Pen Creek Corridor.

LAND USE

The City's Comprehensive Plan is a policy which delineates by categories the desirable use of land for residential and nonresidential purposes. The graphic plan illustrates the use of land for the developed City and serves as a guide in making land use and other decisions affecting the City's future growth and development.

The Comprehensive Plan has been amended by Council action to reflect future park development in a corridor along Wolf Pen Creek from Texas Avenue to the East Bypass, Texas Highway 6. This stretch of the Creek is the area of study in this report.

The types of land use shown adjacent to the Creek by the Comprehensive Plan are a combination of retail-commercial, office, and low- and high-density residential. The uses are arranged in a

compatible manner with commercial emphasis at the major intersections and the high-density residential use generally adjacent and accessible to Harvey Road and Colgate Drive. A small area of low-density residential use is shown south of the Creek.

Since the Comprehensive Plan is a guide for directing development decisions, any impact or changes which result from this study for a more intense use of land within or adjacent to the corridor should be shown on the Plan.

Comments

The Wolf Pen recommendations have a far-reaching effect on the use of land adjacent to and in the vicinity of the Creek corridor. As shown in the following zoning subsection, much of the land has received zoning designation for higher intensity retail, commercial, and multi-family uses.

For the purpose of assisting in evaluating a need for more specific development criteria to assure land use compatibility throughout the corridor, it is suggested the land use plan in the vicinity of Wolf Pen Creek between Highway 6/Texas Avenue, and Harvey Road/Southwest Parkway be evaluated based on the impact of the Wolf Pen improvements. Land use recommendations should be somewhat specific in describing the intended character of development desired to provide input for evaluating future zoning decisions.

ZONING

The existing zoning within the study area bounded by Highway 6 Bypass, Texas Avenue, Harvey Road, and Southwest Parkway is shown by Plate 8. Existing zoning is discussed in detail in a previous section. Zoning regulations are one of the three more important tools for shaping the development adjacent to Wolf Pen Creek. Present range of uses in the nonresidential zoning

categories within the Study Area could have some adverse effect on the proposed park space if properties were to be developed for the more intensive uses of land permitted.

Current nonresidential zoning categories adjacent to the Creek are C-1, General Commercial and C-2, Commercial-Industrial. The C-1 District uses and regulations can be broadly described to provide standards for office and retail service type uses with commercial uses permitted, such as cold storage, hotels, mobile home sales, storage garages, bowling alleys and car washes. C-2 District uses are more intense than C-1 uses and the District is described as permitting light industrial and heavy commercial use.

Building setback lines in both districts are those normally found for these types of zoning categories. The fifteen-foot (15') rear yard setback, if used adjacent to Wolf Pen Creek, without discretion for the nature of park improvements, could have an adverse influence on the park if the buildings were constructed on the building line with a rear service area.

Wolf Pen is intended to create a community focal point and economic asset. This approach is certainly beneficial to adjacent properties. Due to the nature of the proposals for Wolf Pen, special considerations for use, setback, parking arrangement, surface drainage discharge, and other site development features should be designed to become an integral part of the corridor by bonding together the adjacent developments in a compatible manner. Therefore, the various regulations and requirements set forth in the zoning ordinance are not considered totally adequate to insure that the corridor develops in a compatible and homogeneous manner.

The Project Review Committee has the responsibility to review the site plan for each new development. Their function is to fine tune ordinance requirements as they apply to a specific site to accomplish the desires stated above for achieving compatibility. However, their scope is limited by a listing of factors which they can impose in their review of the site plan.

Comments

It is recommended an overlay or new zoning district be prepared for the corridor area. This tool would address the intent and desired character of development and types of uses. The district should set forth special development standards and uses. Developed within the district standards could be a process very similar to, or identical to, the Planned Unit Development District. The purpose of this approach is to allow the land developer more flexibility in site development, and to allow innovative development techniques to be submitted for approval.

In adapting this type of zoning approach, the purpose and intent as would be set forth by the overlay district definition becomes the principal guidance to the approval process.

SUBDIVISION ORDINANCE

The City's subdivision ordinance provides for procedures and standards for the subdivision or platting of land. Prior to development, if property is not separately platted or is not included in a recorded plat, the regulations of the subdivision prevail. The ordinance addresses various design standards for platting, among which are the minimum standards for streets, alleys, easements, subdivision design factors, sidewalks, utilities, and drainage.

In the Wolf Pen corridor, most infrastructure is in place. Except for street extensions, and possibly a new street crossing the Creek, streets have been completed in the corridor. Standards applicable to the development of property adjacent to the Creek include easements, a possible need for alleyways, sidewalks, and drainage improvements; none of which, except drainage, will significantly influence the development of the Wolf Pen park area.

As set forth by the Ordinance in Section 8-I.1., "when a subdivision is traversed by a watercourse, drainageway, natural channel, or stream, there may be required a drainage easement or right-of-way conforming substantially to the limits of such watercourse, plus additional width to accommodate

future needs as determined by the city engineer." This standard required an easement or right-of-way be established for Wolf Pen Creek. An easement would remain with the ownership of the adjacent property, but in the case of a designated flood plain, no use for building purposes can be made of land within the easement. In an easement, it is considered the owner's responsibility to maintain the easement area. The establishment of a right-of-way would generally conform to the same limits as the easement, except the right-of-way would be placed into public use and would become the responsibility of the City for maintenance.

Comments

Since Wolf Pen Creek has a designated 100-year flood plain, it is recommended a right-of-way be secured for handling drainage for this reach of the Creek. The right-of-way becomes the responsibility of the City for improvement and would become public property, both of which are important in the development of the Creek and adjacent flood plain for open space purposes. If appropriate, through the zoning process as recommended above, development rights for coverage, building lines, and other features which a property may lose through dedication may be restored to the property.

DRAINAGE ORDINANCE

A drainage ordinance can be viewed as an extension of the subdivision design criteria establishing specific standards and criteria for handling drainage and related structures and their design. The City's ordinance allows drainageways to be handled in a natural channel such as exists for Wolf Pen Creek. Many cities have approached drainage in this manner and later found, because of intrusions and maintenance, this policy creates long-range problems. Ordinances are structured which require at time of subdivision, in addition to the establishment of an easement or the dedication of right-of-way, a responsibility for the subdivider to be totally responsible for or to share in the drainage improvements through his property.

Properties along Wolf Pen Creek will have tremendous benefits from the creek's corridor development as a park. The channel now meanders, and its banks which are subject to erosion, will be placed in a permanent position and improved with funds from sources other than the property owner. This factor alone should be a strong incentive for a property owner to participate in the Plan. A significant cost benefit ratio exists for the private property. Secondly, the character and nature of the project will have a very positive financial and development impact upon the adjacent properties. This improvement approach will not and cannot be an approach to all creek drainage problems.

Comments

Although the approach to resolving the drainage problems caused by Wolf Pen Creek is beyond the criteria of the drainage ordinance, other than the establishment of the 100 year flood plain and certain sizing design criteria, it is suggested the policy of drainageway improvements be examined.

PARK ORDINANCE

Included within the Subdivision Ordinance is the park dedication ordinance. The ordinance applies to residential land as it is subdivided to either provide park land or money in lieu of land. Brentwood Park, adjacent to Wolf Pen Creek, east of Dartmouth Street, was acquired in this manner.

As other properties in this park zone are platted for residential purposes, cash will be contributed toward the development of Brentwood Park. Since most residential land is platted, this source of additional funds is not likely to be significant to Wolf Pen-Brentwood Park development.

Existing Park Facilities

Existing Park Facilities

The reach of Wolf Pen Creek under study in this report will make a significant addition to the City's park system, when developed. However, the types of facilities proposed for this space will make it unique and should complement other park and recreational features within the system. How this facility relates to other park spaces is important to the park system's overall design. Wolf Pen will function as an independent feature, but the capabilities of linking this space to other features will enhance the overall park system.

Shown on Plate 9 is the physical relationship of Wolf Pen to other existing or planned park features. Also shown, in addition to park spaces, are school sites and greenbelt linkages.

A previously mentioned physical feature pertaining to drainage in College Station is the easterly flow of Wolf Pen Creek, Bee Creek, and Lick Creek. Each of these facilities crosses an underground pipeline easement lying generally in a southeast-northwest direction.

Further south and situated on the eastern side of the Bypass is Lick Creek Park, a 515 acre park space now used as a natural park. As shown, the aforementioned pipeline easement contacts this facility.

Illustrated on Plate 9 is the linkage of most park spaces by natural corridor or planned linkages. As related to this study, Wolf Pen has the possibility to be physically tied to the Texas A & M University Campus upstream, and downstream to other existing and possible future park spaces.

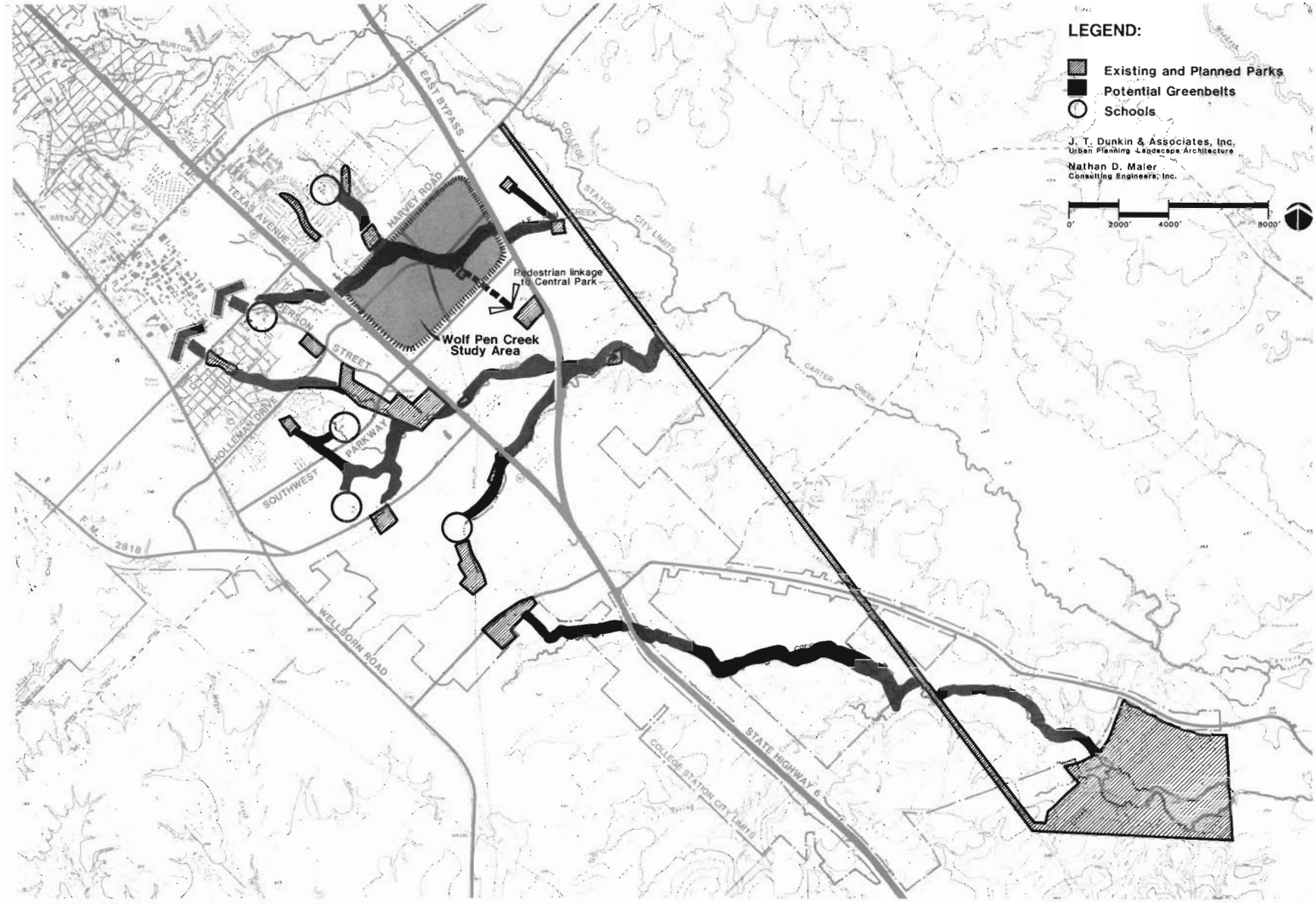
Two important park linkages can now be accomplished with minimal expenditures for land or improvements. Wolf Pen can be tied to Oaks Park by an appropriate pedestrian space in the form of an easement or right-of-way extending from the park to Harvey Road across from Oaks Park. Ideally, an underground connection would be better than the surface linkage; however, this is not be economical or feasible. If a larger drainage opening were required, duplicate use could be made of the structure for drainage and pedestrian use.

Existing Parks

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 9



The other linkage available to be made without major expenditures is the connection of Wolf Pen to Central Park. This linkage can now be extended from Wolf Pen to Southwest Parkway. As urban development occurs south of the Parkway, further planning can be done for continuing the linkage to Central Park.

The system of park linkages shown on Plate 9 is presented to illustrate possible connections between the various park and open space areas. Detailed study would be required to determine if these linkages are feasible and practical. The illustration does, however, show an approach to develop cohesiveness in the overall system. It is evident two linkages can be made as related to Wolf Pen, Oaks, and Central Parks.

Master Plan

Master Plan

GENERAL

Based upon the analysis presented in the previous sections, the Plan and standards presented herein are recommended for use of the space along Wolf Pen Creek . The Plan has many uses and is a guide to development of the Creek's corridor between Highway 6 Bypass and Texas Avenue. Among others, the Plan can be used for directing land development, land acquisition for park and open space purposes, guide for grant applications, and most importantly, a plan which ownerships along the Creek and interested citizens can support for creating an unusual and unique open space for College Station and the region.

Plan elements presented in the following text include drainage, park and open space plan, planning elements, and implementation.

DRAINAGE

The primary purpose of this Study is to address and analyze storm water drainage for the reach of Wolf Pen Creek between Highway 6 Bypass and Texas Avenue, and based upon this analysis, formulate a plan for open space use for the Creek's floodway, flood fringe, and adjoining space when appropriate.

In accomplishing the first step, a companion study to this document was prepared in March, 1988 entitled, "Flood Plain Evaluation, Revised Existing Conditions on Wolf Pen Creek and Tributaries." The report was prepared by Nathan D. Maier, Consulting Engineers and summarizes the hydrologic and hydraulic investigations completed for Wolf Pen Creek and its tributaries in the identified reach. The report further provides detailed flood plain information based upon hydrologic conditions existing in the watershed today and serves as an update to the Flood Insurance Study published in 1981.

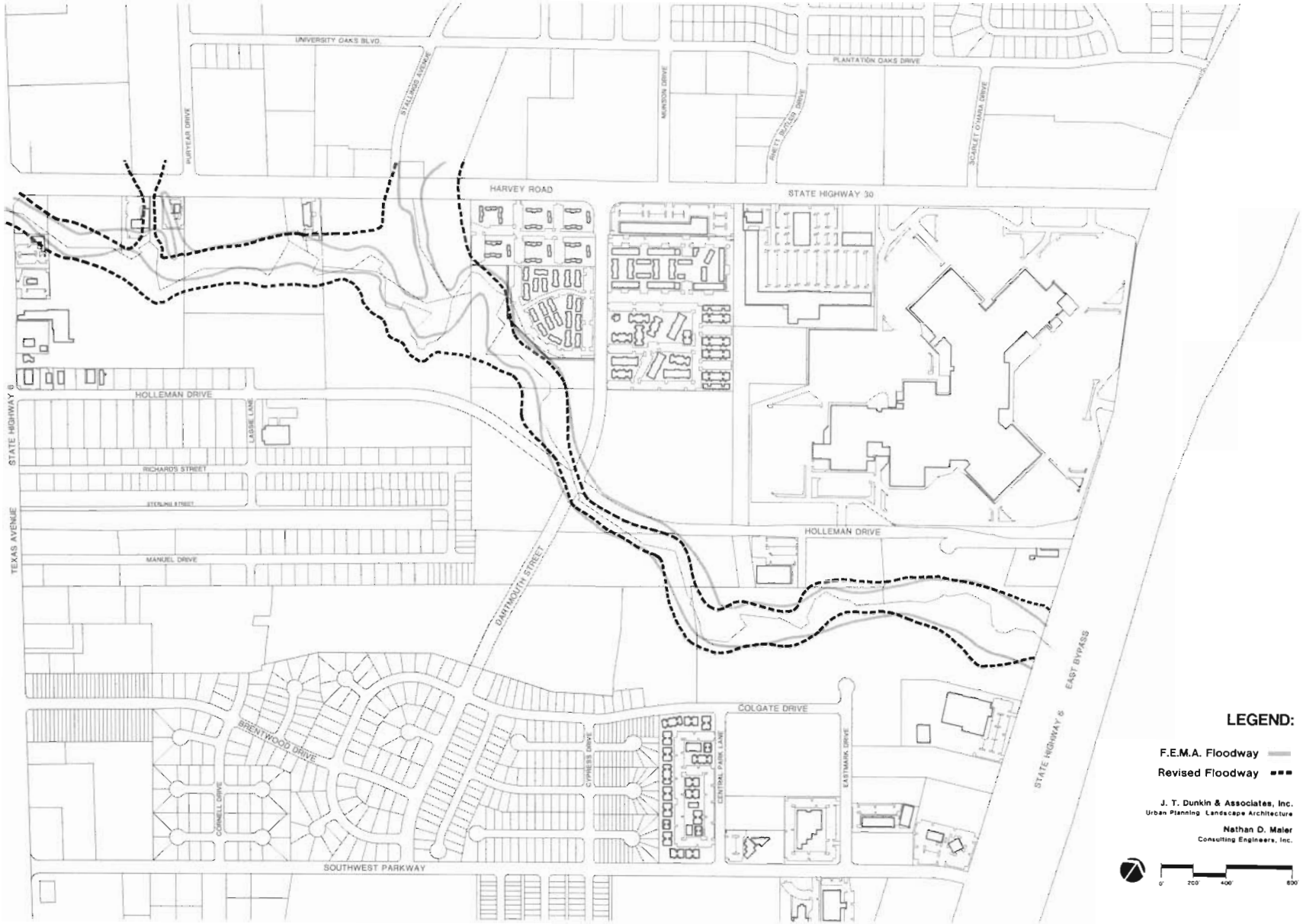
The limits of the floodway, as determined by this report, are shown by Plate 10. For comparison, the existing Federal Emergency Management Agency floodway is also shown. The 100-year flood plain boundary has served to define the limits of the initial study for open space purposes. These limits are the minimum, less any reclamation of flood fringe, which should be preserved as permanent open space and used either for passive or active recreational purposes.

Floodway Comparison

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 10



Flood Plain Comparison

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 11

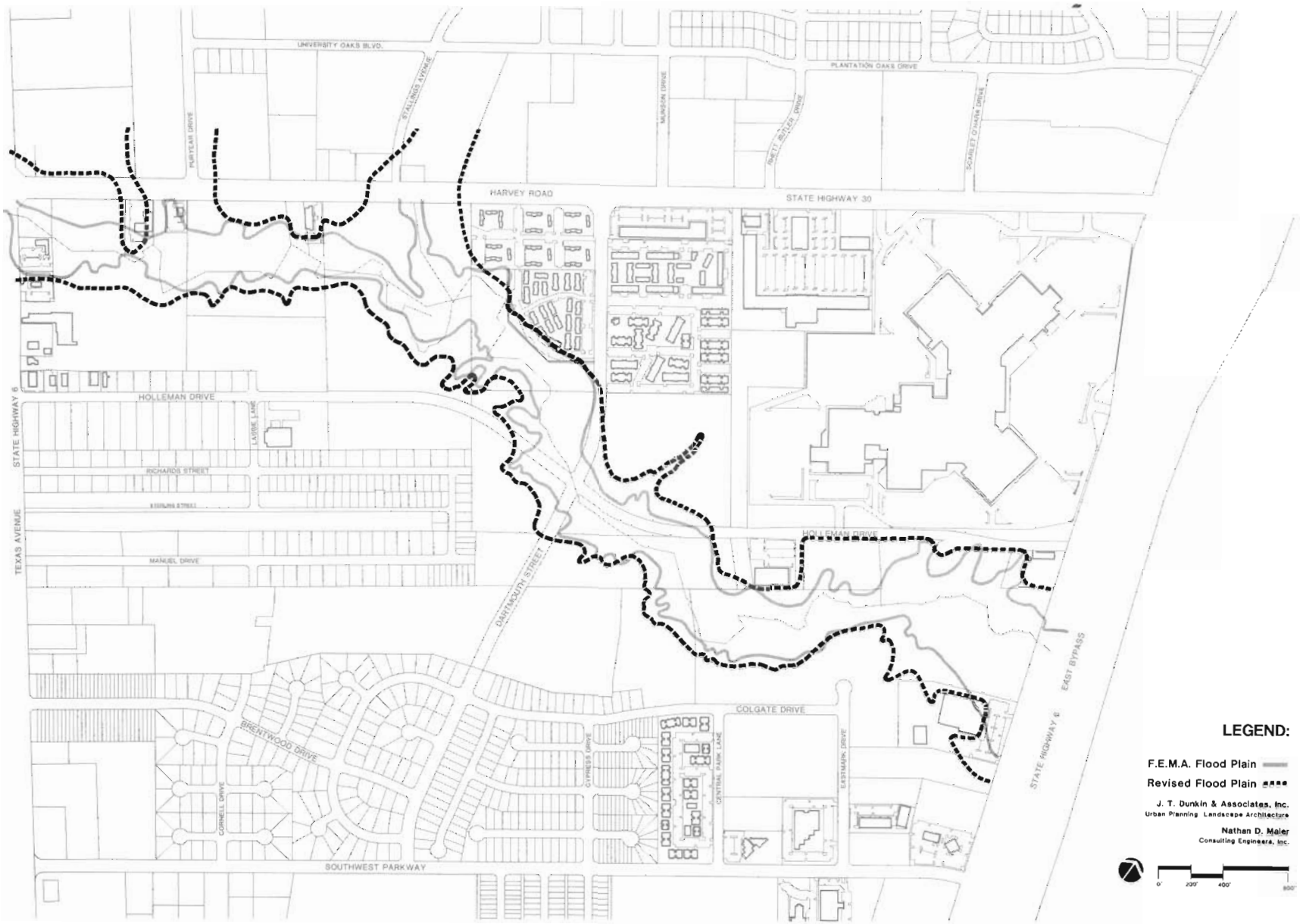


Plate 11 illustrates a comparison between Nathan Maier's study and the existing F.E.M.A. for the 100-year flood plain.

PARK AND OPEN SPACE PLAN

On the consultant's proposal, this plan element identified specific tasks to be accomplished: conceptual plan, park program elements, schematic plan, park plan, and design recommendations. In the following discussion of the Park and Open Space Plan, each task is presented in the sequence discussed with those groups involved in formulating and approving the planning elements.

Core Concept Plan

During preparation of the drainage study, and as initial data was being developed concerning the hydraulics and hydrologic conditions, a conceptual plan was prepared as shown by Plate 12. This plan recognized certain conditions previously identified.

Wolf Pen Creek has very sensitive soils subject to erosion. Through time, the Creek's alignment appears to have changed in various locations. An example where significant erosion continues to occur is upstream from Dartmouth Street where minor excavation was done to slope the bank and improve channel alignment. Influencing the problem of erosion of soils within the floodway is the higher velocity of flows during periods of storm run-off.

Illustrated on Plate 12 is the floodway and floodplain, a series of small lakes, and areas within the flood fringe where it is considered reclamation can generally occur, if desired by the property owner.

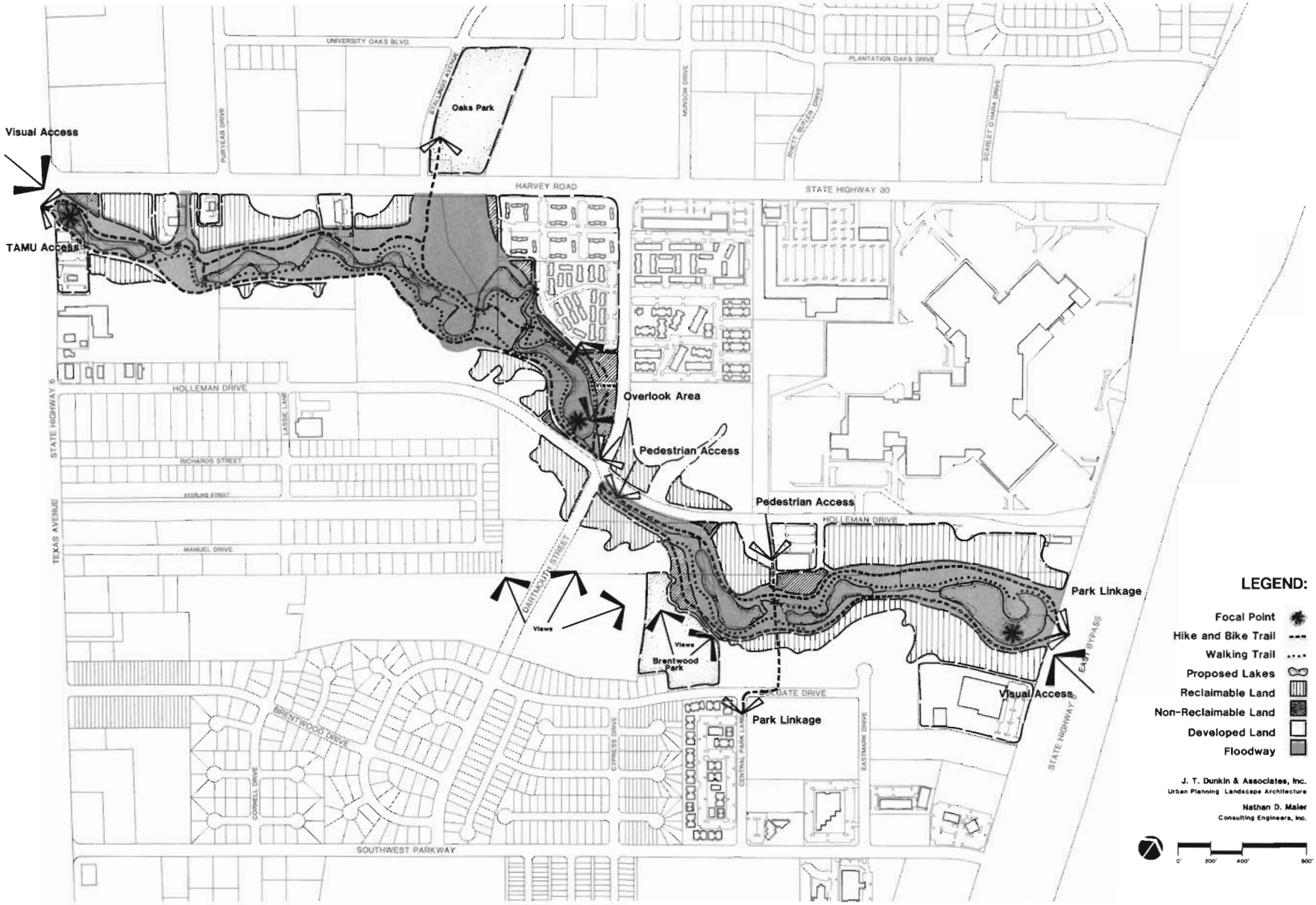
As previously mentioned, the minimum width for the park and open space area should be the floodway and flood fringe. The conceptual plan recognizes those areas possible for reclamation, thereby leaving on either side of the Creek, an area (as shown on Plate 12), which can be utilized for passive recreational purposes. Incorporated into this space to better manage the Creek channel under normal conditions is the spacing of smaller lakes between Texas Avenue and the By-pass.

Core Concept Plan

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 12



The lake features were selected in lieu of no channel protection or protection through stabilization of banks and critical points with some type of feature such as concrete lining.

Incorporated into the open space is a trail system between the By-pass and Texas Avenue. This type of improvement would be the minimum improvement since a preponderance of the trails would be within the floodway and capable of sustaining damage from flood waters. This approach handles the basic needs for drainage, serves a passive park function, and stabilizes the drainage corridor.

Park Elements

Initial program elements were presented for discussion during presentation of the conceptual plan. The range and type of elements were those normally used in a passive area as defined above. Other elements with increased spatial requirements were also discussed. Because of the Creek's setting, these elements could easily be incorporated into the park design by acquiring additional land adjacent to the flood plain. From this discussion evolved criteria for showing an expanded area beyond the basic core concept.

Schematic Plan

The schematic plan, or conceptual master plan, as shown by Plate 13, illustrates the scale relationship of park elements to the site. The plan expands the core plan in various locations to create space for activities and building sites which complement the Creek corridor. The following are major plan features:

- Beyond the flood plain limits between Dartmouth Street and Highway 6 Bypass, south of Wolf Pen Creek are two special areas; a botanical garden and a community activity area. These spaces are located on either side of Brentwood Park, which will have specific neighborhood park facilities for service to surrounding residential uses.

- Shown is the extension of Colgate Drive from Eastmark to the Bypass. This extension has two important features: (1) it provides a continual edge for defining the southern limits for the park space; and (2) the ultimate one-way service roads along the Bypass will create difficult traffic

Conceptual Master Plan

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 13

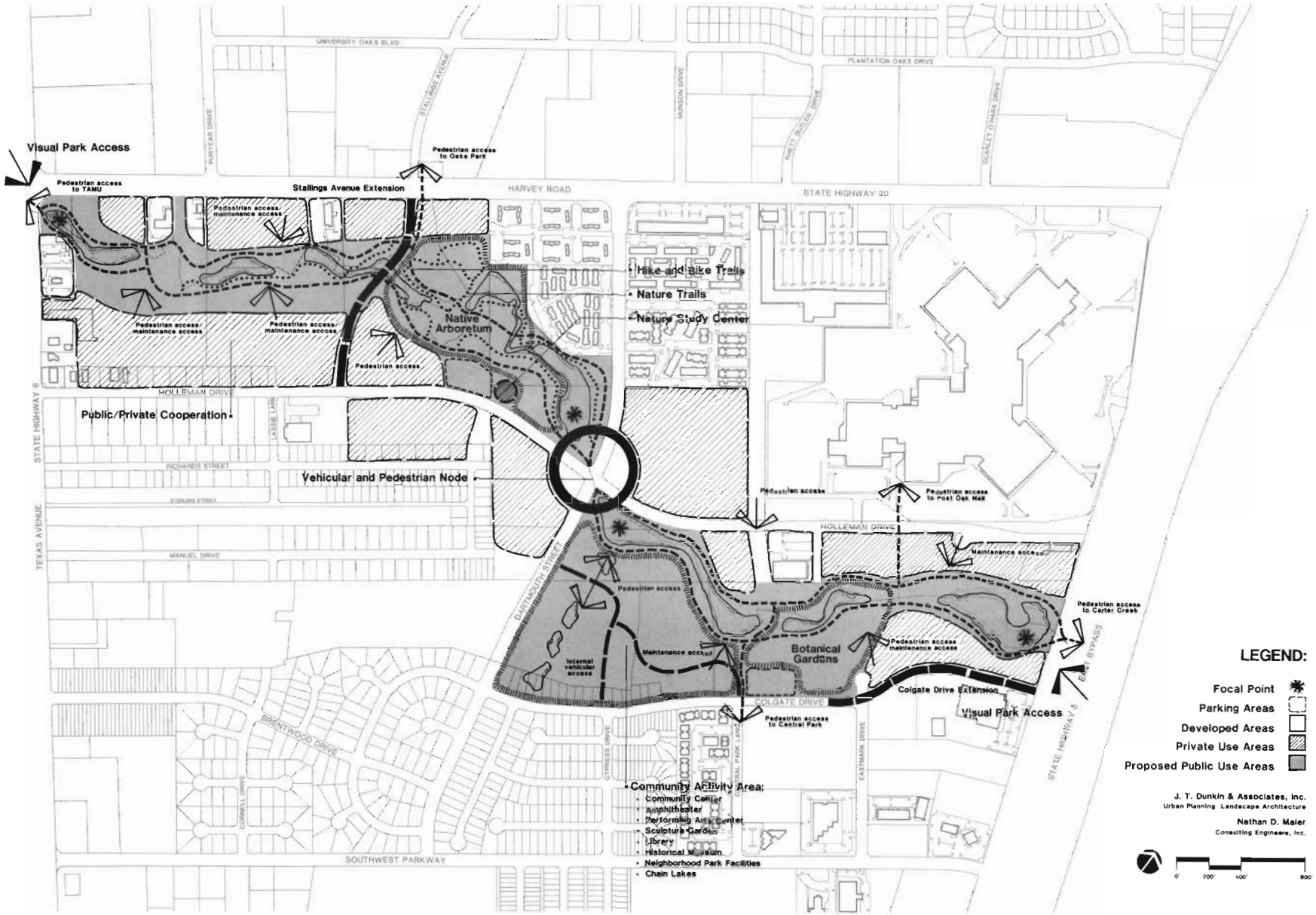


Illustration 2

patterns for access which can be alleviated by this extension between the park space and the Bypass.

- Extending south from Wolf Pen Park at Colgate Drive and Central Park, is a pedestrian linkage to Central Park. This linkage would occur along existing street rights-of-way a short distance beyond Southwest Parkway. From this point, as the vacant land develops in the future, planning must recognize and provide for continuation of the linkage to Central Park.

- The community activity area indicates various types of park and municipal uses identified during discussion of park program elements. Each use is appropriate for this location, but it is recognized further study to determine demand of the facility and timing is required for several of the uses identified.

- A major park element shown west of Dartmouth Street is the native arboretum which incorporates a nature and study center, and nature trails. This particular section of the study area has the most pristine appearance along this reach of Wolf Pen and contains many significant trees. The flood plain is exceptionally wide within this section due to the topography and the influence of storm drainage discharge into Wolf Pen Creek from the tributary in Oaks Park. Though the floodway generally extends to Harvey Road, the land adjacent to Harvey Road is shown to be reclaimed for private use. It is recommended this area be acquired for preservation of the natural environment.

- Along the western perimeter of the native arboretum, Stallings Avenue is shown to extend from Harvey Road to Holleman Drive. This connection will provide an additional route for traffic circulation between these two streets and will provide access to Wolf Pen Park from areas north of the study area at a controlled four-way intersection on Harvey Road. The method by which Stallings Avenue crosses Wolf Pen Creek will need further study before construction to determine the most feasible method for crossing.

- Development of private properties adjoining the park has been a major consideration during the preparation of this study. A public-private approach to improving the corridor has advantages for both the individual property owners and the City. Examples of uses envisioned to be built

on private property with their orientation to the park and passive spaces are restaurants, garden offices, galleries, and other similar types of uses. As shown on the conceptual plan, locations for this type of development would be available on vacant tracts along Holleman Drive between the Bypass and Dartmouth Street, and either side of the Creek westerly to Texas Avenue. Illustrations 2, 3, and 4 show the character of development to be achieved. There should be opportunities on each site to maximize views of the open space, some of which may be afforded by building line variances.

- Focal points which would be designed to place emphasis on their locations are shown on Plate 13 for Texas Avenue, Dartmouth Street, and the Bypass. Since lakes are indicated to be adjacent to each of these locations, a feature which can be included in the design would be lighted fountains in the lakes. The difference in grade between what would likely be the water surface elevation of water bodies at both Texas Avenue and Holleman Drive with the tops of adjacent banks will allow interesting retaining structures, possibly of rock, to be built to retain banks. Stairs would provide a means of access between the bank areas and walkways along the water.

- The trail system in Wolf Pen Park can be extensive, and as shown, be devised to fit specific needs. The continuous trail system throughout the park is recommended to be of a permanent surface such as concrete, and be of a width adequate to handle maintenance vehicles. As shown, this system illustrates pedestrian linkages to Oaks Park, westerly across Texas Avenue, and to Post Oak Mall. Other trails, such as those shown in the native arboretum, are suggested to be of natural materials and marked for alignment throughout the area.

The schematic plan, or Conceptual Master Plan, has used the Core Plan as a framework to which other desirable park elements are added to enhance both the park and adjacent private properties. Generally, these features are located in spaces outside the 100-year flood plain. The Conceptual Plan was the basis for further study and delineating more specific detail of spaces on the graphic Master Plan.

In a perspective sketch, Illustration 2 indicates the character desired to be achieved using water areas, pedestrian and landscape treatment.

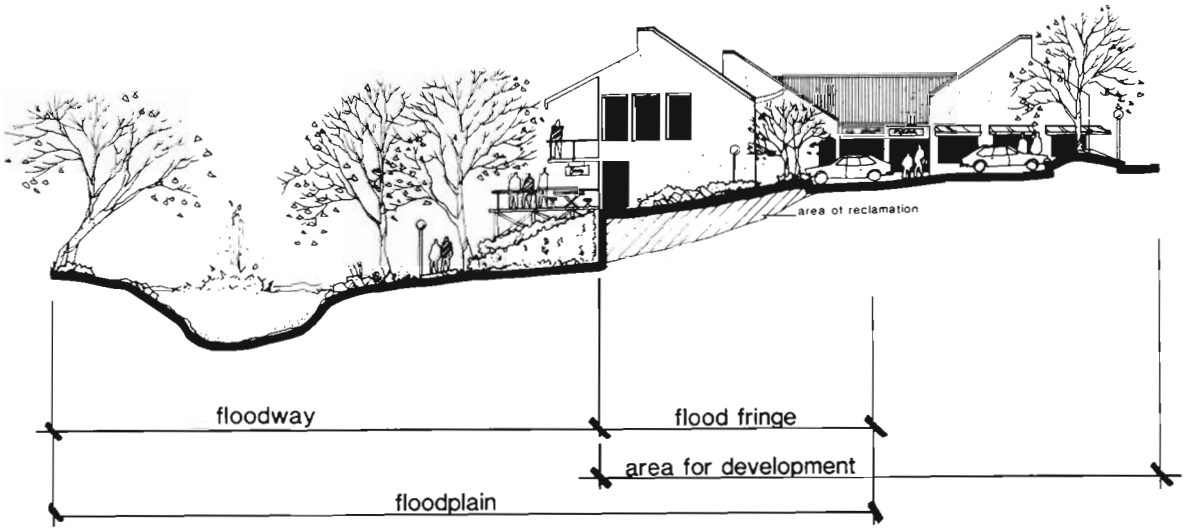


ILLUSTRATION 3

TYPICAL FLOOD PLAIN DEVELOPMENT - FLOOD FRINGE RECLAMATION

Some areas within the flood plain can be economically reclaimed by filling, after approval is received from the City to make such fill. The above cross section illustrates the use of the fill area and how private development can be related to park space in an advantageous manner. Maintaining a natural creek setting with pedestrian walkway, lighting, and landscape development of edge areas can be achieved in Wolf Pen Park.

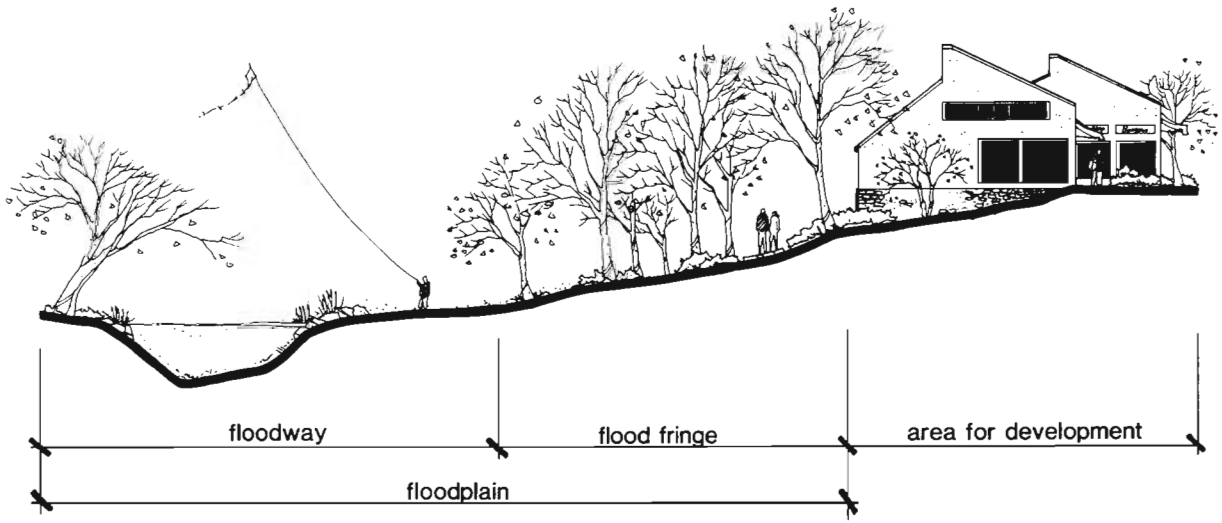


ILLUSTRATION 4
TYPICAL FLOOD PLAIN DEVELOPMENT - NO RECLAMATION

As indicated by the Core Plan, some areas along Wolf Pen are anticipated for reclamation while other areas are not. For those spaces where no reclamation will likely occur, the treatment of the flood plain can be done in a manner shown in the above illustration. The natural setting can be preserved while introducing park features to provide functional use of the open space.

Park Master Plan

The Wolf Pen Creek Master Plan shown on Plate 14 illustrates in graphic representation, the various program elements set forth on the Conceptual Plan. Specific features are suggested for design into final development plans. Examples of such features are detailed for the Botanical Garden, Community Activity Area, Brentwood Park, and other areas in the Park where special features are important elements for implementing the Conceptual Plan.

The relationship of plan proposals to the existing floodway and flood plain can be identified by their location in relationship to the lines shown for these limits. Additional lines shown on the Master Plan not previously discussed are the minimum and secondary reservation lines.

Before implementing any drainage or park improvement along Wolf Pen Creek, the City must obtain control of land within the floodway and floodfringe and appropriate areas adjacent to these boundaries, as indicated by the Master Plan. Land is expected to be acquired by three methods:

- A minimum amount of land will be secured to satisfy requirements for drainage. The acquisition of this land will be through ordinance requirements for dedication of land as an easement or public right-of-way for drainage purposes. Once this land is secured to satisfy the drainage needs, park improvements as shown by the Core Plan could be implemented. Limited improvements can be done within this space and would be subject to inundation.

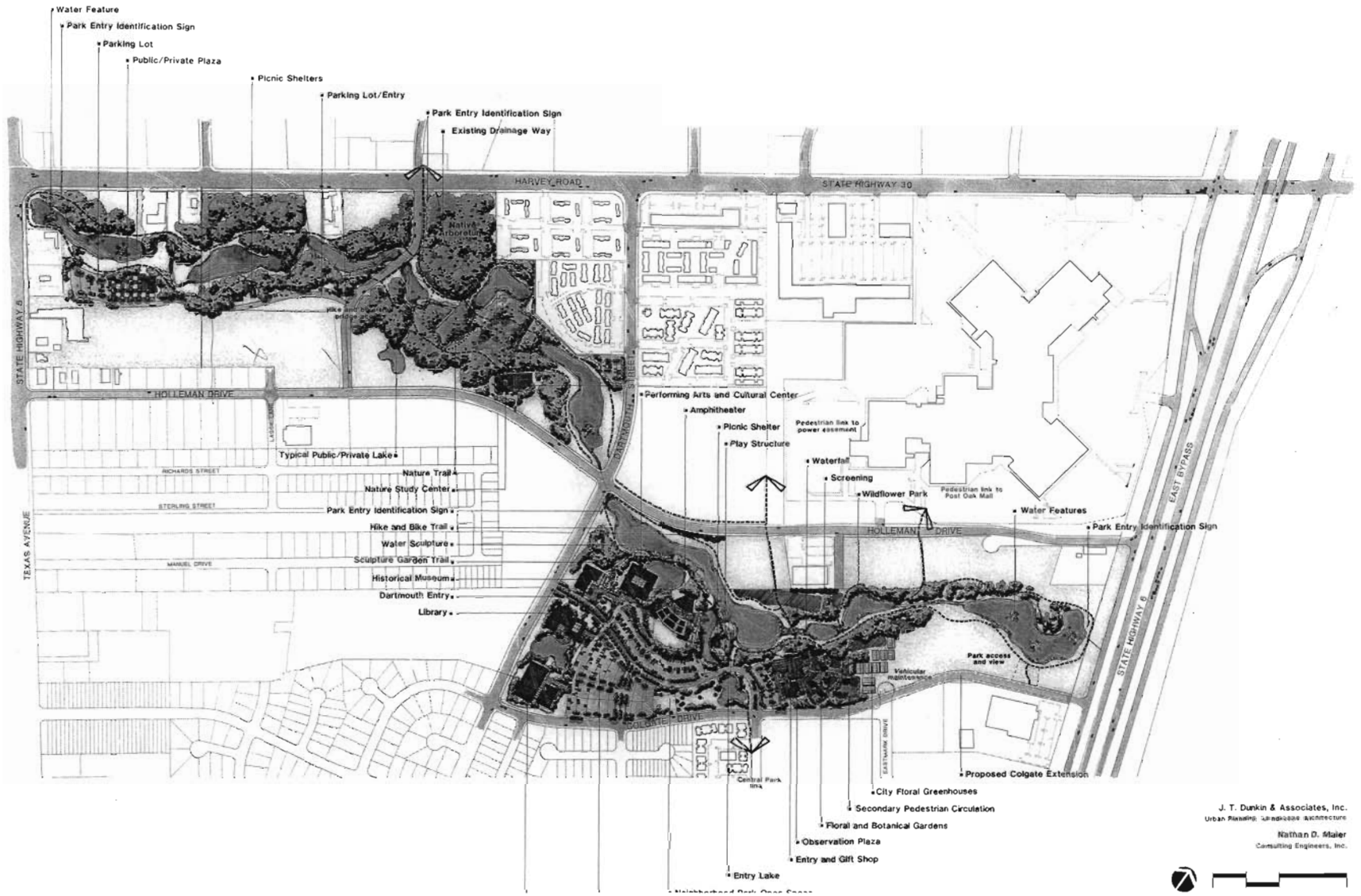
- A second method of acquisition is shown on Plate 15 by the minimum and secondary reservation lines. The premise for the method of acquisition by dedication of these spaces is based upon the economic value added to adjoining property by the adjacent park development. The value consideration is based on two factors: (1) once the flood prone land is placed in municipal ownership, it becomes the responsibility of the City to bear the cost of the drainage improvement and to assume the obligation of continuing maintenance for the drainageway, as well as personal liability. This transfer of ownership relieves the property owners of any financial obligations for drainage improvements related to their properties and assures property stability by creating a defined and controlled course for run-off with elimination of any further erosion; and (2) the enhancement of the adjoining private property by the park improvement, in lieu of, a natural

Wolf Pen Creek Master Plan

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 14

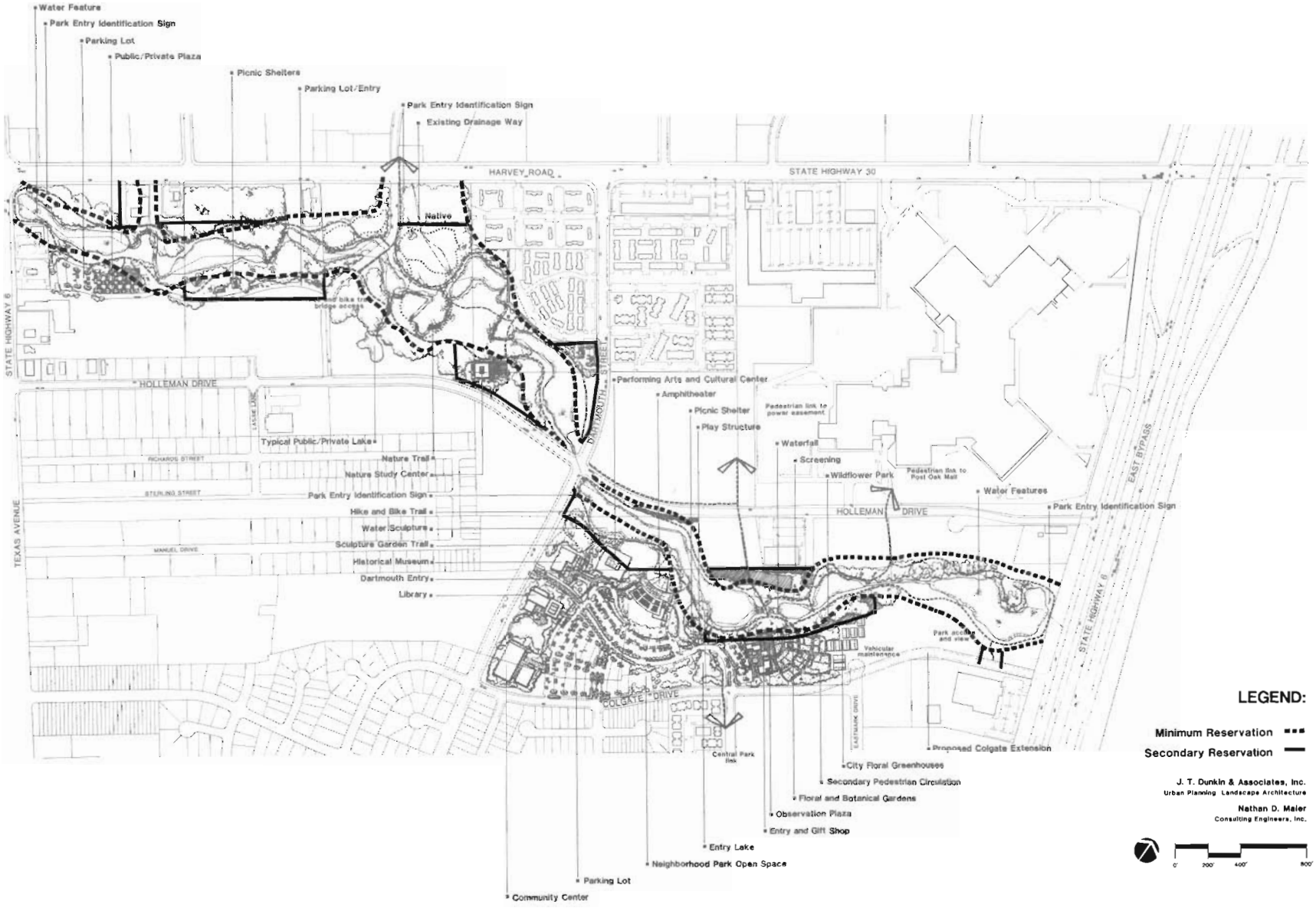


Minimum and Secondary Reservation

COLLEGE STATION, TEXAS

wolf pen creek corridor study I

Plate 15



LEGEND:

Minimum Reservation

Secondary Reservation

J. T. Dunkin & Associates, Inc.
Urban Planning Landscape Architecture

Nathan D. Maier
Consulting Engineers, Inc.

0' 200' 400' 800'

drainageway or an improved channel. In addition, the City has a continuing requirement to maintain the adjacent park space which further provides visual enhancement for the adjoining properties.

1. The minimum reservation line describes a band twenty feet in width lying adjacent to and outside the edge of the floodway. This space will permit, as a minimum, trails to be placed in a manner where they are not subject to constant inundation.

2. The secondary reservation line defines spaces between the minimum line and an identified physical feature which would limit the use of this space for private development.

- The third method of acquisition is purchase of land. Unless dedicated, land beyond the secondary reservation line is anticipated to be purchased. However, in some situations, land in this acquisition category may be obtained by both purchase and dedication as a result of negotiation. Negotiated value can occur where the benefits of the park space and/or improvements contribute significant enhancement to the private property, or through application of development standards, benefits are gained of equal value to land dedicated.

The Master Plan has several benefits, as previously stated. An additional use of the Plan is a guide for drafting and adopting final plans for section or phase development. The Plan, with criteria set forth in this section of the Study establishes the guidelines for acquisition and development. A recommendation for a general set of criteria for development is set forth in Appendix A. As discussed, the minimum development would occur within the floodway. Creating the series of lakes shown on the Plan would occur within these boundaries. The lakes are the major drainage and aesthetic feature in the Wolf Pen Park development.

Specific improvement costs will be determined by actual construction and the phasing of developments. In addition, support by property owner dedications and through monies as gifts or endowments will influence the overall costs. To provide general guidance, a cost estimate of land and facilities shown on the Plan was prepared and is detailed in Appendix B.

When the initial project is determined for construction, various long-range decisions will be made along with those immediate decisions concerning the identified project. The type and nature of construction features, equipment, and appurtenances involving paving, lighting, fixtures, and similar features, will be made. Therefore, it is important to select features which can be used throughout the park. They need not be identical for an item, but complimentary. It is anticipated many of these decisions will be made when the grant application to Texas Parks and Wildlife is prepared for the first project.

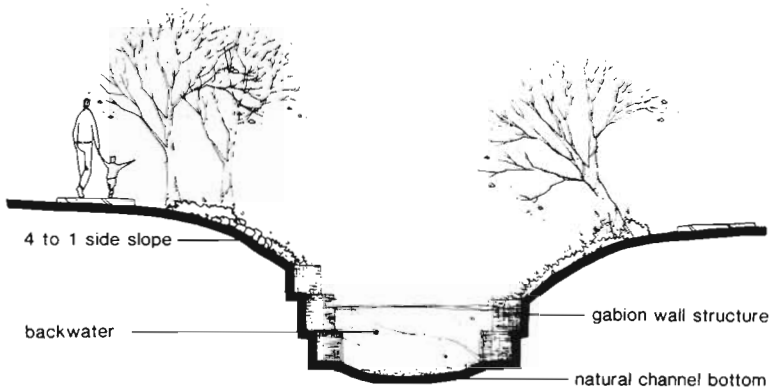
Recommended Development and Design Standards

Lake shore treatment, drainage channels, appurtenances involving hike and bike trails, park fixtures, and similar features are illustrated below. These recommendations are intended to assist implementation of the Master Plan and create an overall character and theme for Wolf Pen Creek.

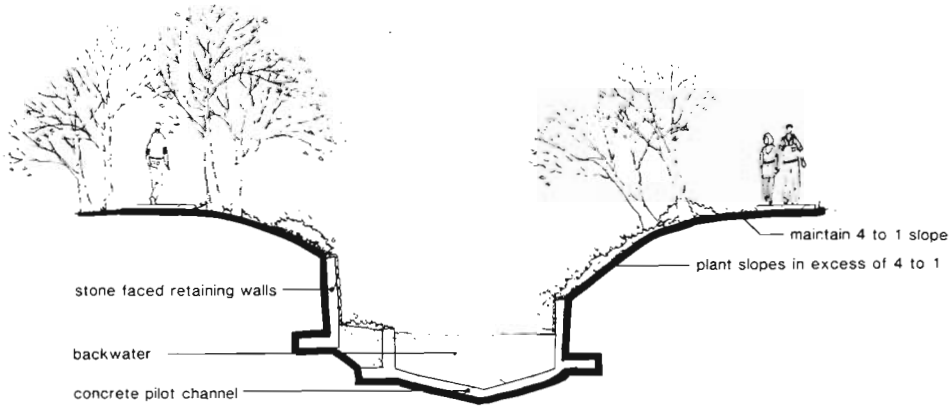
- **Drainage Channels** - Design and construction of the drainage channels will have immediate impact on the overall character of Wolf Pen Creek. *As discussed in the development of this plan, concrete lined channels and side wall slopes, as shown below, are to be avoided.*

Concrete Lined Channels and Side Wall Slopes

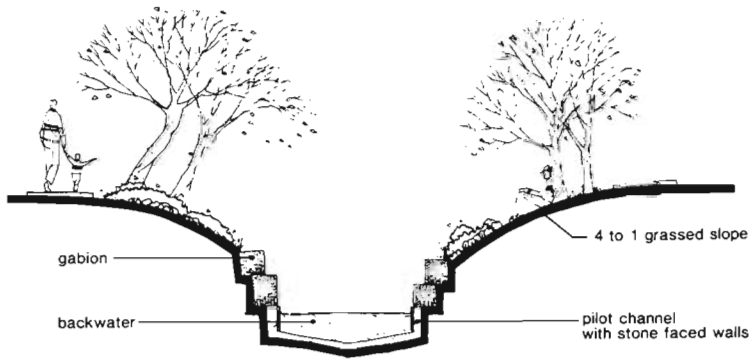
The following recommended channel designs illustrate the character proposed by this study. Final channel treatment will be determined in the design phase with supporting soil and hydraulic reports.



Gabion Channel with Natural Bottom



Stone Wall and Concrete Pilot Channel

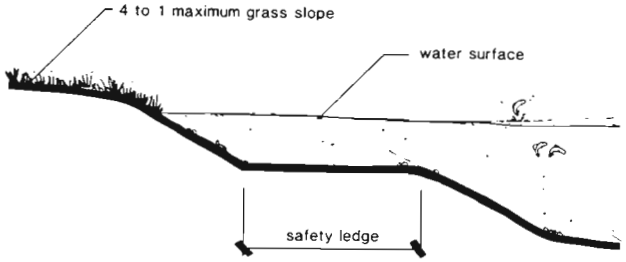


Gabion Wall and Concrete Pilot Channel

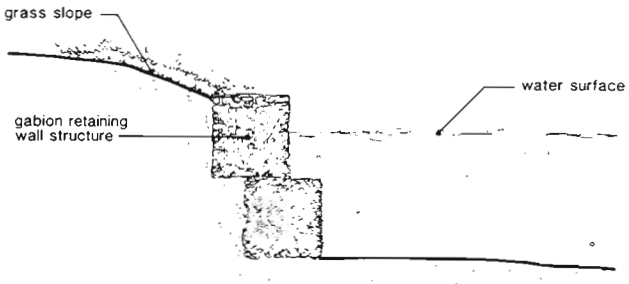
Earthen Channel

▪ Lake Shorelines

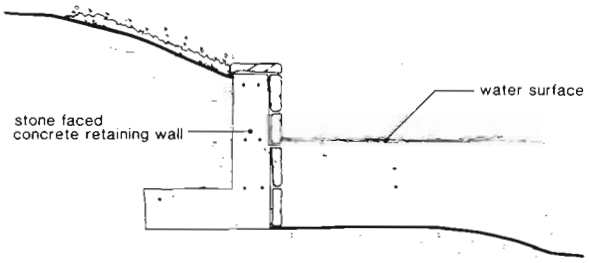
The lake features will have the greatest visual impact on vehicular and pedestrian traffic and will set the overall theme of Wolf Pen Creek. The following sketches are intended to guide lake development and create an image and precedence for future development.



Grass Shoreline

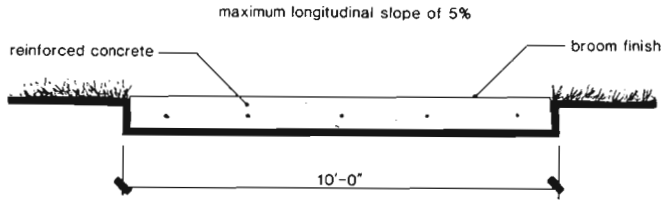


Gabion Shoreline



Stone Wall Shoreline

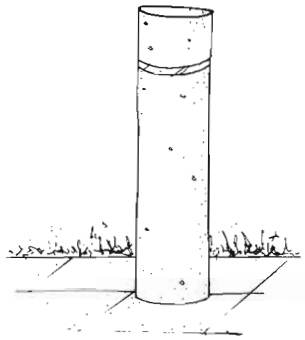
■ Hike & Bike Trail



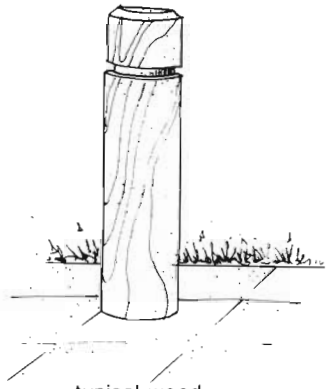
The Hike and Bike Trail is one of the most important elements in the park; it links together sections of the park, provides access for park maintenance vehicles, and is the primary means of moving people along Wolf Pen Creek. The trail must also be durable and able to withstand flooding conditions. Concrete provides a surface which will withstand the traffic and flooding conditions whereas other materials, such as cinders, pavers, or stone create maintenance problems for the City.

■ Bollards

Park bollards will guide and direct vehicular and pedestrian traffic in the Wolf Pen Area and link various sections of the park together. The bollards should be clean and simple in design and easy to reproduce because of the proposed development schedule for Wolf Pen Creek.



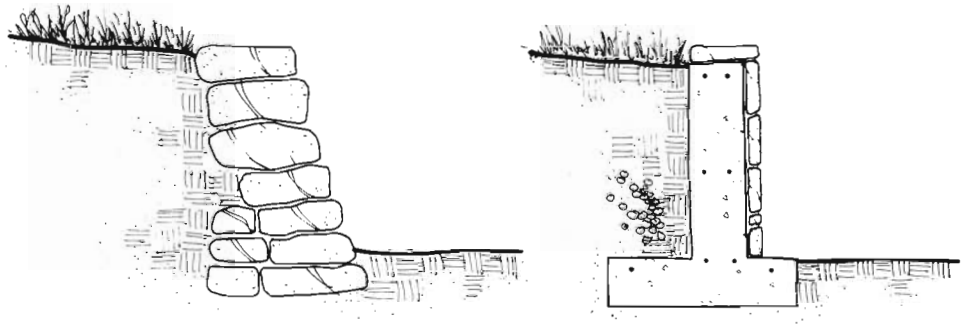
smooth precast concrete bollard



typical wood bollard

- **Retaining Walls**

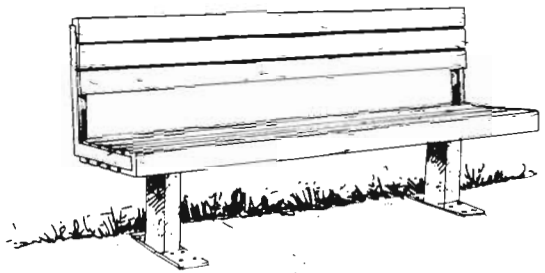
It is anticipated that retaining walls will be required in various sections along Wolf Pen Creek as the park develops. Concrete walls with stone veneer have been proposed, along with dry stack stone walls to enhance the character of the park and blend with the proposed shoreline and channel improvements.



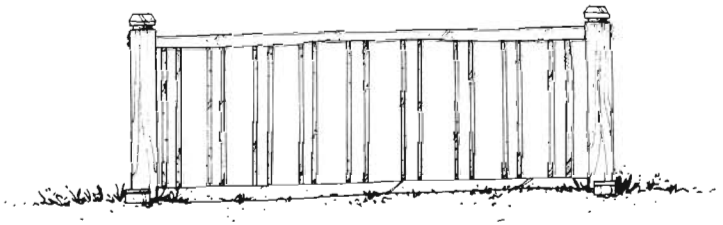
stone walls to be used in highly visible areas

- **Park Benches**

Park benches are of significant importance because of the physical contact park patrons will have with the bench. Benches will also link the park together and begin to set a theme for the Wolf Pen area.



- **Bicycle Racks**



Because of the high bicycle traffic generated by the University, bike racks are of importance to the overall scheme of Wolf Pen Creek. The racks should also be clean and simple in design to blend with other site amenities in the Park. Typically, these would be stationed at primary access points to the park.

PLANNING ELEMENTS

The Master Plan identifies the nature and character desired to be achieved over the development period for Wolf Pen Park. However, other influences will also tend to shape the corridor development and, likewise, the Park. The external forces brought about by land use, zoning, site design standards, and subdivision development can have either a positive or negative impact on the Park. It is important for the City to have input, but not strict control, on adjacent land development. In many cases, this input can be beneficial to the private property owner if various standards can be adjusted to benefit his development. Creating these incentives by the City can become difficult and somewhat limited; however, any approach, concession, assistance, or cooperation which can be achieved in the development of Wolf Pen Park is considered beneficial to both private and public entities. Each of these elements were previously examined and discussed, and the following summarizes approaches and incentives.

Land Use

Land use adjacent to Wolf Pen Park is probably the single feature which will cause private developments to complement the Park area as opposed to being a negative feature. Land use has such close relationship to zoning, it is difficult to cite specific incentives. It is recommended, as an addition to the Land Use Plan, study be made of the recommendations for use of land made herein for the Corridor Study Area between Holleman Drive and Harvey Road, and between Holleman Drive and Colgate Drive from Highway 6 Bypass to Texas Avenue. It would be appropriate to adopt this Plan, as may be modified, as a part of the Land Use Plan. Possible description of (1) the intent of the Park, (2) types of adjoining uses, and (3) the alternate approaches to development of private properties to create land use basis for zoning decisions which can implement ideas set forth in the Plan amendment. No specific incentive other than creating a legal basis for any special zoning is derived from this effort.

Zoning

Most property in the Corridor Study Area is zoned C-1, a district allowing a wide range of commercial uses. The following recommendations are made for the Corridor:

1. Create a special overlay district for the Corridor Study Area which establishes separate development standards by categories of use for permitted uses in the C-1 District. As an example; restaurants, offices, and other identified uses termed more compatible with the park development would have a separate set of standards in comparison to more intense uses such as, commercial garage, mobile home sales, or other similar types of uses. The overlay district would tend to be more restrictive, but it would assure developers who are interested in making an investment in a special environment some protection against those uses creating a negative impact.

2. Within the overlay district, standards for building setback, parking, signage, and landscaping can be scaled to the specific categories of uses formed for those permitted uses within the C-1 District. An additional tool for providing flexibility and creating incentives in the development process of the corridor would be to use the C-P.U.D. standards, or modified

requirements, as a part of the overlay district's approval procedure. This process should build alternatives for site development into the owner's planning and the City's review, as well as how specific site requirements could be changed but still meet the intent of the Ordinance.

3. Other incentives can be created by transferring development rights from property dedicated, setback reductions as related to common boundary, and granting by owner a perpetual open space easement and using this space as site area.

Design Standards

Another alternative is to modify the development standards for the C-1 District to create design incentives. These modifications would involve the parking, site plan requirements, and landscape section of the Ordinance. The recommended incentives are in Appendix C. It is proposed the incentives be used as negotiating points in reviewing site plans.

If an overlay district is selected as a means to increase interest in the Corridor, design standards can be developed within the district to address site development factors such as: design and location criteria for refuse container areas; building line adjustments; customer access and service access coordination between sites; special sign provisions; and other factors to assist in creating a harmonious site development with adjoining properties and the park space.

Platting

Review of the subdivision ordinance did not indicate any significant incentives can be created to be beneficial to the Wolf Pen project. However, it does appear the dedication of land for drainage purposes with the improvements costs for drainage facilities handled by the City is a major property owner incentive.

Implementation

Implementation

IMPLEMENTATION

The Wolf Pen Creek Master Plan includes a variety of park related uses and areas, and spaces for public building facilities. The Plan's design brings together these features in a manner where facilities are complementary to each other and are adapted to the topography and natural features found in the corridor. Additionally, the intent is for the park development to encourage and blend with future use of private properties where park land will contact these adjoining private properties.

Implementation of the Plan will likely occur in phases because of the size and nature of the planned facilities. The first step to be accomplished is securing appropriate land to begin development. As a minimum, it is recommended the floodway be secured for construction of the lake system in either the eastern or western section of the project. If the system is built in stages in either section, all floodway land should still be obtained or a definite commitment made by the property owners to allow control of the drainageway by the City. As discussed previously, a twenty-foot strip is proposed for acquisition adjacent to the floodway. This land, too, should be obtained during the initial phases of final planning for the first project.

Acquisition through dedication of the floodway in either the eastern or western section will allow implementation of the plan elements shown by the Core Plan. Since the floodway has no development potential, therefore minimal economic value, it would be a reasonable gift by the property owner in return for the enhancement resulting from the proposed drainage and park improvement. A similar position can be taken for dedication of the reservation strip in evaluating the benefits to the adjacent private properties.

For land acquisition beyond the reservation strips, limited dedication can be expected through negotiation of site development criteria during the zoning administration process of site plan review, either under the suggested overlay district, C-P.U.D. or present site plan review by the project review committee.

The first project should indicate very strong emphasis on the project's desired character. As an example, if joint agreement is reached by property owners between Dartmouth Street and Texas

Avenue, the details for development features in the corridor at either of the thoroughfares should make a strong design statement for the purpose of creating further property owner-citizen interest.

As planned, the first project is proposed to be submitted to Texas Parks and Wildlife for a matching grant; the dollar value of the match being determined by the appraised land values of property owner dedications and any monies from municipal sources. The limits of the project would likely coincide with the boundaries of dedication either side of the Creek. Once the initial project is completed, the process can again be repeated for obtaining future construction funds. This grant process with Texas Parks and Wildlife has been a very beneficial and successful method for many cities to fund park projects.

The following describes the recommended may steps to be taken by the City for implementation:

1. Property owner dedication of floodway and a twenty-foot strip within the flood fringe
2. Acquisition of any additional property needed for the project under consideration
3. Preparation of a final development plan for the first phase of the project
4. Submission of application and plan to Texas Parks and Wildlife
5. Upon approval of application, prepare project contract documents
6. Bid and construction process
7. Repeat process for second project

Implementation Funding

Methods for funding capital expenditures can be from a variety of sources. Using these sources in combination with each other as compared to straight funding from one municipal source will be

beneficial to the project and to those properties within the corridor. The sooner the project elements are completed, the sooner value is added to properties adjoining Wolf Pen Park.

The following describes those methods considered applicable to produce revenues for project expenditures:

1. Tax Increment Financing - The Tax Increment Financing Act of 1981 set forth legislation permitting municipalities to create reinvestment zones for the purpose of qualifying for tax increment financing. The Act describes various requirements for the formation and operation of the tax increment financing zone, among which are specific plans for assessment of zone conditions, defining projects, and method of financing improvements during the life of the Tax Increment Zone. The limit of the Zone is the geographic area defined in the local ordinance adopting tax increment financing. It is within these boundaries where the tax increment is applied to specific public or private development or redevelopment projects.

   The tax increment in any single year is the amount derived from the assessment of values between the base year and the selected year. The value of the annual monies from this source is based upon the continuing improvement of property and the assessed values within the district.

2. Tax Abatement - Article 1066f, Property Redevelopment and Tax Abatement Act of Texas is intended to instigate an agreement between the City and private property owner, calling for tax exemptions for property improvements in designated zones, in combination with specified capital improvements to be made by the City.

   Areas to be considered as reinvestment zones must meet certain criteria established by the Act. For example, the area must "...constitute an economic or social liability..." and, "because of .... deterioration of structures or site improvements, or other factors, substantially impair or arrest the sound growth of the city or town."

This form of financing is beneficial to the private property and should be an incentive for development.

3. Municipal - Funds derived from this source would be for specific public projects and be from bonds, warrants, or general fund sources. Bonds or warrants obligate the city for repayment over a fixed time period. Money to amortize park improvement bonds would have to be from an obligation tax source.

It is possible to retire the bond or warrant debt with annual funds from the tax increment source, if a district is established.

Improvements funded from annual budgeting can be made available; however, capital outlay funds from the operating budget would normally be in smaller amounts and would not make a significant contribution.

Because of the scope and size of the Wolf Pen project, it should be planned to use the bond source as a method of providing funds for improvements.

Voluntary Land Dedication

This source of support can certainly be a major factor in implementing the Plan. Dedication will not require municipal funds for purchase of park land. If Texas Parks and Wildlife is involved, the City will receive money of equal value to the dedicated land for construction funds. Voluntary dedication, as previously stated, should occur for the floodway and non-reclaimable flood fringe.

Land outside the flood plain may be dedicated by the property owner, or purchased through the use of funds given by a community benefactor.

Texas Parks and Wildlife Department

This method of funding from a grant source has been previously discussed. The Texas Parks and Wildlife Department will assist cities, if chosen, based on a competitive application by: (1) matching in dollars the value of land owned by the City in fee simple or land which is committed for dedication to the City; and (2) matching dollars for city funds.

Once in the Texas Parks and Wildlife funding process, the City can construct considerable improvements in a relatively short period of time. The nature of the Wolf Creek Plan would likely be a very competitive project for being selected for funding.

MAINTENANCE

For the purpose of formulating maintenance costs, the City staff prepared an operational cost analysis for the project at the time of completion of the preliminary master plan. Since maintenance is a continuing cost to be funded, this item, too, becomes a part of the master plan consideration. Appendix D sets forth the documentation of maintenance costs as researched and developed by the City staff.

Appendix

Appendix A

DEVELOPMENT STANDARDS

The purpose and intent of the Wolf Pen Creek study is to provide a drainage plan for the Wolf Pen Creek, coupled with seizing opportunities for park and open space use. The park development is proposed to complement adjacent private property and its future improvements. To further achieve the purpose and intent, the following general recommendations for corridor development of private and public property are proposed for adoption and guidance. In achieving this purpose, open space areas are created for active and passive use, and much of the Creek's natural setting is being preserved.

DRAINAGE CRITERIA

1. Preserve the natural setting of the creek while conveying the 100-year flood waters of the fully developed Wolf Pen watershed in a natural drainageway in lieu of a manmade channel of concrete or similar material.

2. The initial acquisition is the floodway and the minimum reservation line. The floodway and minimum reservation line is recommended to be dedicated to the City for drainage and public open space use.

3. In the event the developer does not dedicate the floodway and opts to bear the cost of the drainage improvements, the developer shall improve the drainageway and maintain the floodway to City standards. These standards may include: (a) cleaning and removal of brush; (b) bank stabilization; (c) erosion control; and (d) no extensive channel work.

4. The developer, or property owner, may reclaim the flood fringe subsequent to reclamation plans approved by the City Engineer.

5. Flood fringe areas not reclaimed by the developer may be acquired by the City though dedication or purchase at market value for flood plain land.

DEVELOPMENT STANDARDS FOR PROPERTY ADJACENT TO THE WOLF PEN PARK

1. On-site lighting shall be positioned to reduce glare and undesirable light. A listing of acceptable fixtures and lights will be made available. Sodium lights are not to be used in the corridor.

2. On-site trash collection points shall be identified on the site plan. Owners shall be encouraged in the joint use of property trash collection agreements. Collection points may also act as vehicular access points for park maintenance vehicles.

3. Building service areas and trash collection points shall be screened from the creek corridor, trail system, parking areas, and dedicated streets.

4. Sign regulations will address the type, size, illumination, and location for signage which would front Wolf Pen Creek.

5. The property dedication line may act as the rear building line where approved by site plan. The owner may build or deck into the dedicated property or floodway. Filling in the floodway shall be prohibited and property in the flood fringe may be filled with City permission after appropriate drainage study is prepared, submitted, and approved. The allowable depth of building or decking into the park or floodway shall be determined by the amount of land dedicated land or a set maximum depth.

6. All utility services will be installed underground by the developer.

7. Architectural standards shall control the use of metal panels, tilt walls, or other construction materials considered to have an adverse visual impact.

8. Joint vehicular access agreements from dedicated streets are encouraged.

9. Minimum park access easements for vehicular and pedestrian traffic.

10 To minimize erosion, drainage discharge from private property to park land shall be approved on the site plan.

11. Any building with the rear of the structure oriented to the park space shall maintain a setback as required by Ordinance and shall provide a living screen on the inside of the rear property line.

Fill Materials*

1. The fill materials must be placed or stored in accordance with an approved site plan by the City of College Station.

2. The fill must not be placed over existing utility lines without permission of the City of College Station.

3. The fill must not be stored or placed under the driplines of any tree three inches (3") or greater in caliper.

4. Stored fill materials must be maintained in an aesthetically pleasing manner by the property owner.

*Materials may be hauled in or excavated for lake construction

Appendix B

PRELIMINARY COST ESTIMATE
WOLF PEN CREEK CORRIDOR

Use Area	Acquisition	Development
A. Wolf Pen Creek Park		
1. Core Area		
a. Estimated land cost	$ 160,000	
b. Park elements		
Hike & bike trail		
Rest benches		
Nature walking trail		
Lake development		
Clearing & excavation		
Spray fountains		
Picnic tables		
Picnic shelters		
Play apparatus		$ 3,525,000
B. Wolf Pen Creek Corridor Elements Eligible for Grant Assistance		
1. Botanical Gardens		
a. Estimated land cost	455,000	
b. Garden improvements		1,700,000

Use Area	Acquisition	Development
2. Arboretum		
a. Estimated land cost	210,000	
b. Facility improvements		250,000
3. Nature Study Center		
a. Estimated land cost	95,000	
b. Center development		600,000
C. Future Community Facilities (Development by Local Funding)		
1. Chain Lakes Water Features		
a. Estimated land cost	130,000	
b. Feature cost		200,000
2. Historical Museum		
a. Estimated land cost	145,000	
b. Building and facilities		1,700,000
3. Performing Arts Center		
a. Estimated land cost	65,000	
b. Facilities improvement		1,700,000

Use Area	Acquisition	Development
4. Sculpture Garden		
a. Estimated land cost	32,000	
b. Garden development		800,000
5. Library and Amphitheater		
a. Estimated land cost	540,000	
b. Facilities improvement		3,750,000
6. Eastside Community Center		
a. Estimated land cost	260,000	
b. Facilities improvement		2,000,000

Appendix C

RECOMMENDED INCENTIVES FOR DEVELOPMENT OF PRIVATE PROPERTY WITHIN THE CORRIDOR STUDY AREA

PARKING STANDARDS, SECTION 9

1. 9.2 A5. RAISED ISLANDS: Reduce the 8' buffer strip to 4'.

2. 9.2 A6. AREA OF RAISED ISLANDS: Reduce the 180 square feet to 90 square feet. This will still allow for planting of 3 to 4 inch caliper trees.

3. 9.2 A6. INTERIOR PARKING: Eliminate the interior parking at both ends because none of the sites are large enough in the Wolf Pen Corridor.

4. 9.2 A6.b PERIPHERAL PARKING: Increase the 20 space minimum to 25 parking spaces.

5. 7. Decrease the 360 square feet to 180 square feet.

6. 8. Completely eliminate # 8.

7. 8.B. Increase the distance for off-site parking from 200' to 350'. This may also be of benefit for park parking.

8. Provide for compact parking spaces on-site.

OFF-STREET PARKING REQUIREMENTS: Increase Banks, Day Care Centers, Office, and Personal Services from 250 S.F. per parking space to 275 S.F. per parking space. Increase medical and dental from 150 S.F. to 200 S.F. per parking space.

SITE PLAN REQUIREMENTS, SECTION 10

1. All site plans shall be reviewed by the P.R.C. and\or the Planning and Zoning Commission.

2. Incentives could be awarded for developments which orient to the floodplain and have pedestrian access to the trail system.

3. Require rear elevations for buildings which back to the floodplain and desire access to the floodplain.

4. Service areas or trash dumpsters shall not be located to the rear of the building or within a determined distance from the dedicated land.

LANDSCAPE REQUIREMENTS, SECTION 11

1. If one of the following trees is preserved in accordance with the barricade table provided in this section the developer will receive bonus points towards fulfilling the landscape requirements: Burr Oak, Red Oak, Live Oak, Texas Ash, Pecan, Water Oak, White Ash, Hackberry, Post Oaks.

2. Points may be awarded for transplanting or replacing the native species, such as yaupons, on the site as the site develops.

3. By reducing the required parking spaces in section 9, you also reduce the point requirement in the landscape section.

SETBACKS

1. Allow the property dedication line to act as the rear building line and potentially build or deck into the dedicated property. This is not permitting filling in the dedicated property. The allowable depth of building or decking could be determined by the amount of dedicated land or a set maximum depth.

Appendix D

OPERATIONAL COST ANALYSIS
WOLF PEN CREEK PROJECT
JUNE 17, 1988

I. INTRODUCTION

This staff study has been prepared to formulate a preliminary cost estimate for the Wolf Pen Creek Project. The study was completed by senior members of the Parks and Recreation Department Staff[1]. It is based upon the operational costs associated with the maintenance of existing College Station Municipal facilities. Also, the projections are based upon the stated assumptions as well as the features indicated in the approved master plan for the project.

II. ASSUMPTIONS

The following assumptions are deemed to be valid:

1. The project will be built in accordance with the approved master plan. Also, all areas described in this analysis are to be wholly maintained by city forces.

2. These estimates do not address routine silt removal and creek channel maintenance. That cost estimate is being formulated by other departments and will be the responsibility of other departments for on-going maintenance.

3. The public areas would be extensively landscaped and would require close attention. Also, approximately 60% of the walking trails would be of a formally landscaped design as opposed to "natural" trails. All trail surfaces are assumed to be a minimum width of 10 feet and will be constructed of concrete or other hard surface[2].

4. High initial maintenance equipment costs would be reduced in subsequent years' according to established replacement schedules. Therefore, only the projected annual equipment costs are reflected[3].

5. Maintenance/Horticultural facilities would eventually be developed "on-site" to house crews. This facility would be incorporated into the design and development of other public buildings planned for future phases. This is in keeping with the present concept of "decentralized" park and grounds maintenance now employed by the city.

6. The square footage of cultivated beds is based upon 5% of the total "developed" public acreage. This figure is similar to what existing city facilities such as City Hall and Community Center now have[4].

7. The maintenance estimates are divided according to three zones of development: Zone I - Texas Ave. to Stallings Drive extension; Zone II - Stallings Drive extension to Dartmouth/Holleman intersection; Zone III - Dartmouth/Holleman intersection to Highway 6 Bypass.

III. SITE ANALYSIS

Zone I - Texas Avenue - Stallings Drive

Site description - Heavily wooded tract with narrow creek channel bisecting the site, development would consist of accent lakes, trails, and some parking areas.

Length of creek channel -	2,600 L.F.
Linear feet of trails -	5,500 L.F.
Acres of public land -	24.8 AC.
Developed acres -	8.8 AC.
Native acres -	16.0 AC.
Square feet cultivated beds -	19,200 SQ. FT.
Ornamental fountains -	2
Area lights -	110

Zone II - Stallings Drive to Dartmouth/Holleman.

Site Description - Heavily wooded areas with principal open spaces located next to Dartmouth/Holleman intersection, development would consist of accent lakes, trails, parking areas, and a nature study center.

Length of creek channel -	3,000 L.F.
Linear feet of trails -	5,600 L.F.
Acres of public land -	22.4 AC.
Developed acres -	6.2 AC.
Native acres -	16.2 AC.
Square feet cultivated beds -	13,100 SQ. FT.
Ornamental fountains -	1
Area lights -	112

Zone III - Dartmouth/Holleman to Highway 6 Bypass

Site Description - Open tract sparsely wooded with wide creek channel, development would consist of the City Center with a Community Center, Library, Historical Museum, Performing Arts Center and Amphitheater. Parking lots, accent lakes, trails, and observation points would also be included in this zone development.

Length of creek channel -	3,800 L.F.
Linear feet of trails -	8,100 L.F.
Acres of public land -	48.9 AC.
Developed acres -	27.2 AC.
Native acres -	21.7 AC.
Square feet cultivated beds -	59,200 SQ. FT.
Ornamental fountains -	7
Area Lights -	162
Water Falls -	1

GRAND TOTALS -

Length of creek channel -	9,100 L.F.
Linear feet of trails -	19,200 L.F.
Acres of public land -	96.10 AC.
Development acres -	42.20 AC.
Native acres -	53.90 AC.
Square feet cultivated beds -	91,500 SQ. FT.
Ornamental fountains -	10
Area Lights -	384
Water Falls -	3

IV. PROJECTED ANNUAL FINANCIAL IMPACT

ITEM	ZONE I	ZONE II	ZONE III	TOTAL DEVELOPMENT
LABOR[5]	3 Personnel @ 14,000 $ 42,000	3 Personnel @ 14,000 $ 42,000	5 Personnel @ 15,000 $ 75,000	8 Personnel @ 15,000* $ 120,000
UTILITIES[6]	15,600	14,640	37,840	68,080
MATERIALS[7]	10,000	10,000	20,000	40,000
EQUIPMENT[8]	5,000	5,000	10,000	20,000
TOTAL	$ 72,600	$ 71,640	$142,840	$ 268,080

* It is projected that a minimum of three personnel would be required for either Zone I or Zone II. Five personnel would be required for Zone III. A maximum of eight personnel could maintain the entire development as a single site.

V. RECOMMENDATIONS

1. Construction designs should be carefully monitored to minimize maintenance and utility operational costs.
2. Wolf Pen Creek should be considered as a separate district for maintenance and operation purposes rather than be "attached" to existing crews.
3. All trails, ponds, and public facilities must have established access points for maintenance equipment.
4. All cultivated beds will be constructed to allow proper drainage, irrigation and fertilization.
5. An internal staff reorganization study should be conducted to determine the best course of action for coordinating and supervising the maintenance operations of the project.

WOLF PEN CREEK 6/23/1988
ANNUAL CREEK MAINTENANCE COSTS

STREAM REACH	EXISTING CONDITIONS CHANNEL LENGTH (FT)	EXISTING CONDITIONS ANNUAL $/LF $.25	PRIVATELY DEVELOPED (BEHIND REDMOND TERRACE) CHANNEL LENGTH (FT)	PRIVATELY DEVELOPED (BEHIND REDMOND TERRACE) ANNUAL $/LF $1.55	DEVELOPED WITH LAKES CHANNEL LENGTH (FT)	DEVELOPED WITH LAKES ANNUAL $/LF $4.65
I. TEXAS - STALLINGS	2600	$650.00	2600	$4,030.00	1000	$4,650.00
II. STALLINGS - DARTMOUTH	3000	$750.00	3000	$4,650.00	1360	$6,324.00
III. DARTMOUTH - BY-PASS	3800	$950.00	3800	$5,890.00	840	$3,906.00
T O T A L	9400	$2,350.00	9400	$14,570.00	3200	$14,880.00

1. EXISTING CONDITIONS MEANS WOLF PEN CREEK AS IT EXISTS TODAY. THE ONLY IMPROVEMENTS BEING THE CHANNELIZATION AND CROSSING AT DARTMOUTH/HOLLEMAN.
2. PRIVATELY DEVELOPED MEANS THAT THE FLOODPLAIN IS RECLAIMED FOR DEVELOPMENT AND A MINIMALY IMPROVED CHANNEL IS DEDICATED TO THE CITY FOR MAINTENANCE.
3. DEVELOPED WITH LAKES MEANS THE CREEK DEVELOPED AS PROPOSED IN THE SCHEMATIC MASTER PLAN. THE LENGTH OF CHANNEL THAT NEEDS MAINTENANCE IS REDUCED BY THE ADDITION OF THE LAKES. THE COST OF MAINTAINING LAKES IS NOT REFLECTED HERE.

ANNUAL LAKE MAINTENANCE

STREAM REACH	LAKE AREA (AC)	SILT CAPACITY (CY)	SILT DEPOSIT (CY/YR)	YEARS BETWEEN DREDGING	COST/YEAR @ $2.00/CY
I. TEXAS - STALLINGS	5	7599	817	9	$1,688.62
II. STALLINGS - DARTMOUTH	5	8147	817	10	$1,629.47
III. DARTMOUTH - BY-PASS	11	17037	817	21	$1,622.55
T O T A L	20	32783	817	40	$1,639.15

1. ESTIMATED ANNUAL SILT DEPOSITS ARE BASED ON DATA FROM "EROSION & SEDIMENT CONTROL GUIDELINES FOR DEVELOPING AREAS IN TEXAS", U.S.D.A. SOIL CONSERVATION SERVICE, 1976.
2. IT IS ASSUMED THAT THE LAKES SHOULD BE DREDGED WHEN THE SILT COLLECTED REACHES A DEPTH OF 1 FOOT.

SUMMARY OF ANNUAL OPERATING COST

STREAM REACH	PARK OPERATION	CREEK MAINTENANCE	LAKE MAINTENANCE	T O T A L
I. TEXAS - STALLINGS	$72,600.00	$4,650.00	$1,688.62	$78,938.62
II. STALLINGS - DARTMOUTH	$71,640.00	$6,324.00	$1,629.47	$79,593.47
III. DARTMOUTH - BY-PASS	$142,340.00	$3,906.00	$1,622.55	$148,368.55
T O T A L	$288,580.00	$14,880.00	$1,639.15	$284,599.15

FOOTNOTES

1. Steve Beachy, Director of Parks and Recreation
Tony Cisneros, Assistant Director of Parks and Recreation
Rhoda Savage, Parks Superintendent,
Eric Ploeger, Forestry Superintendent

2. This estimate is based on vegetation and site conditions as shown on the approved master plan. The walkways will be 10' of paved surface plus an average of 15' of adjacent turf area.

3. Initial costs would include major items such as vehicles, small utility trucks, mowers, trimmers, etc...

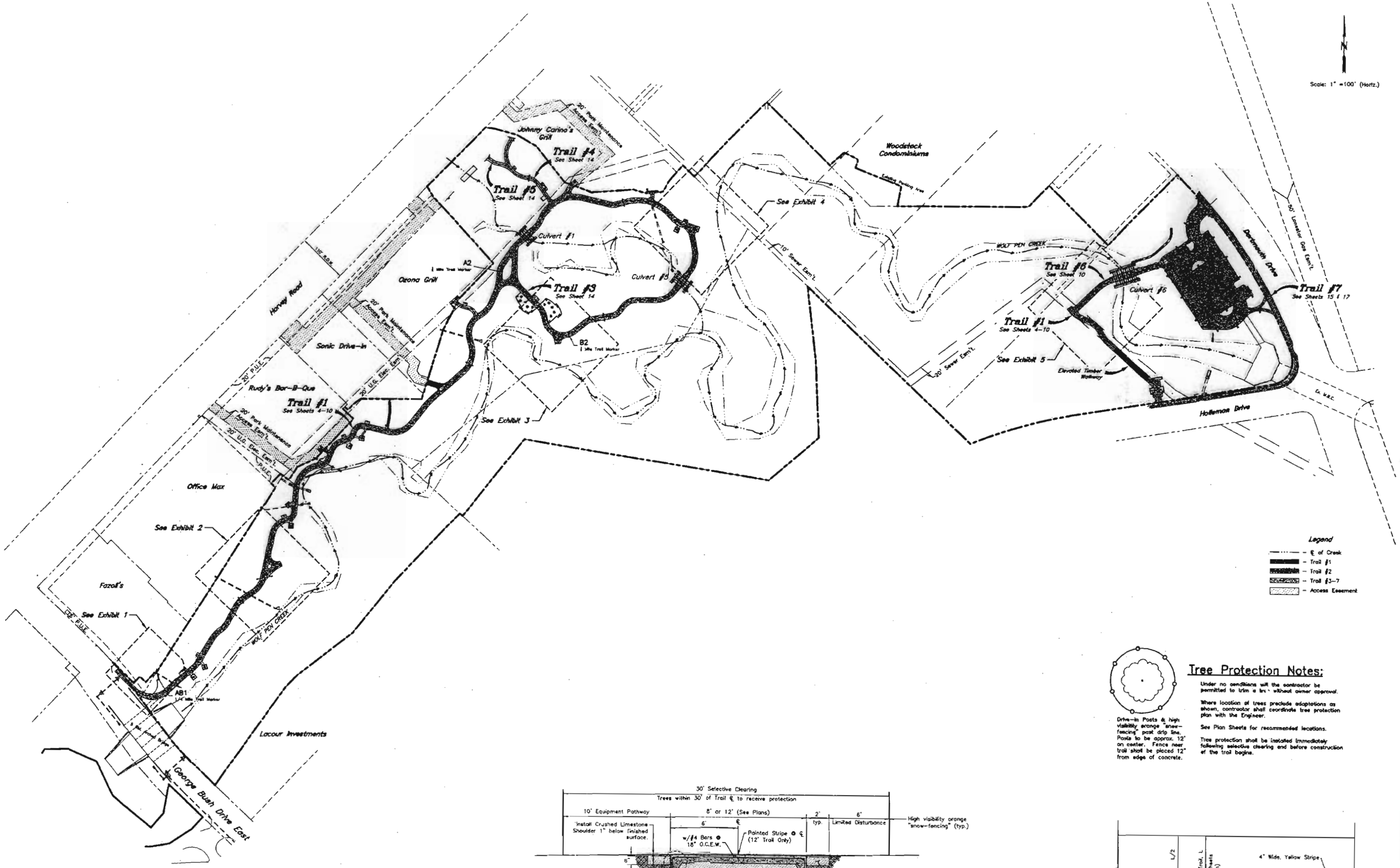
4. City Hall/Central Fire Station site is approximately 5.5 acres and has 16,192 square feet of cultivated beds - 7%. Community Center site is approximately 2.3 acres and includes 4,634 square feet of cultivated beds - 4.6%.

5. Personnel estimates are average figures for pay grade 16 employees to include all associated costs. The figures for Zone III reflect the higher average cost for an additional supervisory position.

6. Utility costs include the average cost for area light fixtures and water fountains. The lights are 250 Watt HPS, and costs are based upon those now operating in Raintree Park (approximately $10.00 per month per fixture). The fountains are based upon the average cost for a 2 HP fountain now operating in Gabbard Park (operates during daylight hours at an average cost of $100 per month). Also, an additional $10,000 is estimated for annual operational costs associated with the waterfalls illustrated in Zone III.

7. These estimates include those costs associated with fuel, fertilizer, chemicals, and other miscellaneous supplies.

8. These estimates include those costs associated with the annual replacement of lawn mowers, trimmers, vehicles, etc... Replacements are scheduled every three years for small engine equipment and every seven years for vehicles in accordance with existing city policies.



Tree Protection Notes:

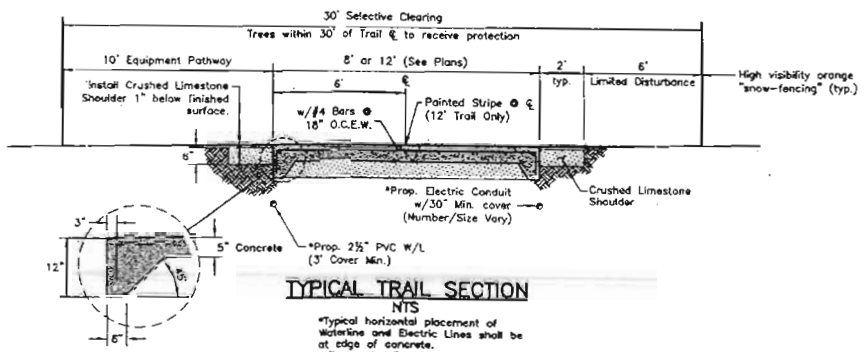
Under no conditions will the contractor be permitted to trim a tree without owner approval.

Where location of trees preclude adaptations as shown, contractor shall coordinate tree protection plan with the Engineer.

See Plan Sheets for recommended locations.

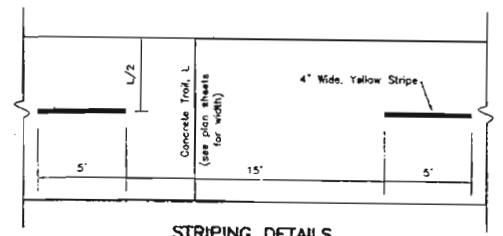
Tree protection shall be installed immediately following selective clearing and before construction of the trail begins.

Drive-in Posts & high visibility orange "snow-fencing" post drip line. Posts to be approx. 12' on center. Fence near trail shall be placed 12" from edge of concrete.



TYPICAL TRAIL SECTION
NTS

*Typical horizontal placement of waterline and Electric Lines shall be at edge of concrete. Adjust water line & electrical conduit down to miss conflicts.



STRIPING DETAILS
NTS

*Contractor shall be responsible for layout of striping plan in the field according to this detail.

STATE OF TEXAS
KENT M. LAVA
65923
LICENSED PROFESSIONAL ENGINEER

DATE: DECEMBER, 2003
DRAWN BY: AJH | CHK
DESIGNED BY: JCF | JLR
CHECKED BY: | MHL

REVISIONS
9/29/04 – Revised per City Comments

CONSULTANTS

McCLURE ENGINEERING, INC.
1006 Woodcreek Drive
Suite 103
College Station, TX
(979) 693-3838

LANDSCAPE ARCHITECTURE
Robert B. Rust, A.S.L.A.
3131 Briarcrest Dr. Suite 112
Bryan, Texas 77802
(979) 776-9692

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Richard C. Robertson, D Eng, P.E.
1004 Woodcreek, Dr.
College Station, Texas 77845
(979) 693-5454

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Paul Swoboda, P.E.
7010 Coyote Run
Bryan, Texas 77808
(979) 774-3400

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205 N. Sims Ave.
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